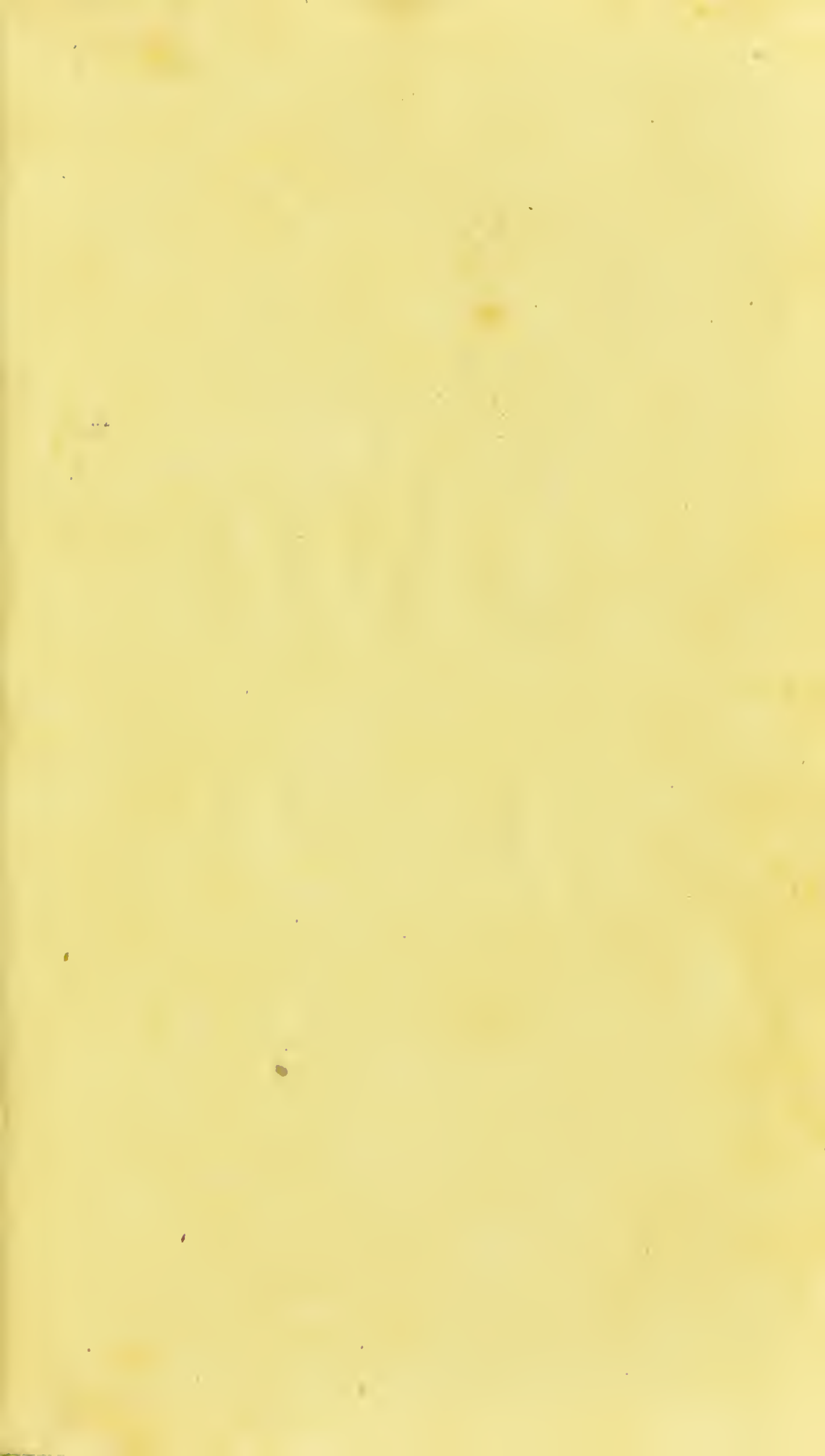




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81. VI. D. 39

FACTS DECISIVE

IN FAVOUR

OF THE

COW-POCK



INCLUDING

AN ACCOUNT OF THE INOCULATION

OF THE

VILLAGE OF LOWTHER.

---

BY

*ROBERT JOHN THORNTON, M.D.*

Late of Trinity College, Cambridge; Lecturer on Medical Botany at Guy's Hospital; Physician to the Mary-le-bone Dispensary; One of the Council of the London Medical Society; Member of several Literary Societies; Author of the Philosophy of Medicine; A New Illustration of the Sexual System; And the Politician's Creed,

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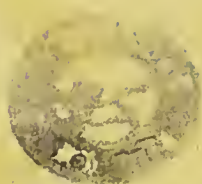
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1802.



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The highest honours have been conferred on heroes both ancient and modern, who have desolated provinces by the destruction of their fellow-creatures: trophies, monuments, and statues, have been erected to commemorate their sanguinary deeds; but the altar of JENNER is not consecrated by hecatombs of the slain; *his* claim is that of having saved and multiplied the human race, of having arrested the arm which scatters death and misery over the universe.

DR. LETTSOM.

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TO THE  
EARL OF LONSDALE,  
LORD LIEUTENANT OF THE COUNTIES OF  
WESTMORELAND AND CUMBERLAND,  
&c. &c.

MY LORD,

THE strength of a nation is its people ;  
hence the preservation of life has been esteemed  
among the duties of legislators. Humanity  
pleads also in favour of a plan to annihilate  
the deaths and miseries excited by the  
*small-pox* ; and your Lordship's high political  
situation, great philanthropy, joined to a most  
acute and penetrating mind, well versed in all  
sciences, first led your Lordship to observe,  
and sanction, the scheme of *Vaccine Inoculation*,  
or *Cow-pock* ; which will be, we trust, proved  
in this book, chiefly from the experiments  
conducted at LOWTHER, as capable of effecting

## DEDICATION.

so desirable a purpose. And whilst thus bringing your Lordship's name publickly forward, as allowing this Dedication for promoting the essential interests of humanity, I have also the pleasing view of testifying how much I esteem myself honoured in having the privilege of expressing my gratitude to your Lordship for the many acts of private friendship shewn me by your Lordship; and have the honour to remain,

MY LORD,

With unfeigned respect,

Your Lordship's most obliged,

and devoted servant,

ROBERT JOHN THORNTON.

PART I.

---

ON THE  
N A T U R A L  
AND  
I N O C U L A T E D  
*SMALL-POX.*





## SECT. I.

### DESCRIPTION OF THE NATURAL SMALL-POX, AND ITS RAVAGES.

THERE is no disease, that the medical writer has to describe, which presents a more melancholy scene than the *natural Small-pox*, as it very frequently occurs.

When the physician is first called to the bedside of the patient, he is enabled at once to form a probable conjecture as to the approaching disorder,

1. From the frequent sighings and sobbings of the person labouring under an anxiety he is unable to express.
2. By pains felt in the region of the stomach, with an inclination, but generally an inability, to vomit.
3. By the racking and frequent shooting pains along the back and loins.
4. A general lassitude and aching of every limb.
5. A most unpleasant sensation of cold, not relieved by any external warmth.
6. A continued drowsiness, and disinclination to take food.

Then succeed

7. Heat.

8. Thirst.

9. An inflamed eye.

10. Restlessness, or a constant inquietude.

11. The pulse is quick and hard.

12. Convulsions now come on in children, and

13. Violent sweating in adults.

Such are the symptoms which usher in this dreadful foe to the human race, which now manifests itself,

14. By many speck-like spots, resembling flea-bites, which appear first on the face, and upper parts of the body, and afterwards invade the whole trunk, look angry, create pain, and gradually elevate themselves above the skin, taking on the appearance of pimples.

15. By the fifth or sixth day, these are converted into pustules, containing a transparent fluid, and each has an accompanying inflammation around.

At this period of the disease,

16. The throat becomes inflamed and is painful.

17. The breath is hot and foetid.

18. Swallowing is difficult.

19. The voice hoarse.

20. In adults there comes on a salivation, and

21. In infants a diarrhoea.

On



On the seventh day,

22. The eye-lids swell, and are glued together, and the patient has both the sensation and apprehension of the loss of sight.

On the eighth day,

23. The aqueous fluid of the pustules is changed into thick pus.
24. And the effluvia now issuing from the patient is highly noisome and infectious.
25. Or, instead of a yellow pus, or matter, only ichor is produced, which erodes deep, and ends in mortification of the parts.
26. Often, purple spots appear in the spaces surrounding the eruption, which forebodes the approaching catastrophe.
27. Often, profuse hæmorrhages of thin corrupt blood pass off by the several outlets of the body.
28. The human face divine, bereft of every feature, then exhibits the most distressing sight, being one mass of corruption; and, at this time, should sleep kindly come in to appease his miseries, it is disturbed and short, and he frequently wakes with a start, as if roused by some dreadful apprehension; but more generally the sleepless nights are passed in tearing off this mask of humours, which from a dark brown changes to a black, and each morning presents a horrid scene of gore mingled with corruption.

To

To behold the poor tortured victim muffled, resisting, and finally overcoming every artifice to prevent him tearing his flesh to pieces, is the most melancholy sight which the fond mother can witness. By-standers no longer recognize the temper or features of the lovely infant. Happy if he escape without actual loss of vision, and the dimples of the cherub cheek are not furrowed into deep seams and unsightly pits. Parents at such a moment would willingly compromise every external grace for the possession of life. But fate yet hangs suspended on a thread. The swelling of the face abates.

29. The limbs in their turn become tumified.
30. The fever, which had remitted somewhat of its first violence, recurs, from the matter absorbed, and the poor tortured victim undergoing a second conflict more dreadful than the first, with weakened powers of resistance,
31. Most commonly from between the 14th to the 17th day (one out of three or four usually dying of the natural small-pox) finds a release from his miseries by the Arrow of Death, now esteemed as a kind Deliverer, instead of the Horror of the Human Conception.
32. Or if Nature should come off victorious, how scarred! how each bone protrudes through the skin! how the limbs totter! how fretful  
the

the temper! how emaciated the countenance!  
how sunk the eye! how livid the flesh!

Perhaps even then the Destroyer has still accomplished his work, and the patient, too early congratulated, sinks under

1. A lingering consumption,
2. Or he is eaten away by slow corroding ulcers, commonly called the king's evil, or scrophula.

Such is the too faithful picture of this loathsome disease, that baffles in description all the powers of language, and which destroys annually in Great Britain alone 50,000 souls, or throughout the habitable globe 20,000,000 of people, exclusive of those who perish from the impoverished state of the system, producing those formidable disorders, which follow in her train.

THE MORTALITY OCCASIONED BY THE SMALL-POX.

Ἦξει δὲ καὶ πολύπῃς  
καὶ πολύχειρ, ἃ δεινοῖς  
κρυπτομένα λόχοις  
καλκοπῃς ἔριννύς.

Lo! with unnumbered hands, and countless feet,  
The Fury comes, her destined prey to meet;  
Deep in the covert hid, *she glides unseen.*—

SOPHOCLES.

The reader may form some tolerable notion of the ravages committed by the small-pox, by examining the bills of mortality, for in London  
where

where the climate is temperate, the disease well known, and the treatment of the sick very ably conducted, from 2000 to 3000, at the present day, annually perish. *Baron Dimsdale.*

So great was the epidemic of the small-pox at Paris in 1723, that upwards of 20,000 perished in that city alone! *Voltaire.*

In 1768, this same scourge destroyed at Naples 16,000 persons in a few weeks. *Abbé Chappe.*

In Russia the annual destruction is estimated at 2,000,000. *Baron Dimsdale.*

In China, where the population is immense, the number who annually die of the small-pox, the most loathsome, next to the leprosy, of all diseases, is incalculable. *Dr. Clark.*

The fatality is still more remarkable among new people, who are wholly ignorant of the means of prevention, and the methods of cure.

The small-pox was first introduced into New Spain in 1520, by a negro slave, who attended Narvarex in his expedition against Cortes. Torribio affirms, that one half of the people in the provinces visited with this distemper, died. The small-pox was not brought into Peru for several years after the invasion of the Spaniards; but there too that distemper proved very fatal to the natives. *Garcia Origen, p. 88. cited in Robertson's History of America, vol. iii. p. 400.*



About fifty years after the discovery of Peru, the small-pox was carried over from Europe to America, by way of Carthagená, when it overran the continent of the new world, and destroyed upwards of 100,000 Indians in the single province of Quito. This account was found by M. La Condamine, in an ancient MS. preserved in the cathedral of that city. This author also observes, that in the Portuguese settlements bordering upon the river Amazons, the small-pox was nearly fatal to all the natives, i. e. original Americans. See his *Mem. sur l'Inoc.* p. 61.

In 1767, never were so many people seen to die as at Kamtschatka, when a soldier introduced the small-pox for the first time; 20,000 perishing from that disease, and whole villages were observed nearly desolate. *Cook's Voyage.*

The small-pox was first introduced into the frozen region of Greenland in 1733, when the mortality of this disease was so great, that it almost depopulated the whole country. See *Crantz's History of Greenland*, vol. i. p. 336.

Even so late as the year 1793, when the small-pox was conveyed to the Isle of France, in the East Indies, by a Dutch ship, 5,400 persons perished there by this distemper in six weeks. *Woodville*, vol. i. p. 28.

## THE CONCLUSION.

1. Hence it appears, that had the small-pox seized upon a person more than once during the period of life, the body being susceptible of more than one attack, as is the case with colds, fevers, agues, &c. either the human race would have presented a frightful spectacle of corroded scars and mangled deformity, or, what is more probable, would have become extinct, unless the inventive genius of man, assisted by God's mercy, had found out a mode to lessen the fatality and deformity occasioned by so formidable a disease, either by treatment, or some other means.

2. It is likewise evident from this statement, that all the wars throughout the whole world (an observation worthy the notice of the statesman) have never cut the thread of so many lives as this inexorable Devourer of the human race, now happily, as will be seen in the following sections, chained down, it is hoped, never more to turn her destructive fury on mankind, and strew the universe with dead bodies, mangled victims, and disconsolate mourners.

SECT.

## SECT. II.

## ANTIQUITY OF INOCULATION.

THE practice of inoculating, or transferring the small-pox from an infected to a sound person, has prevailed from time immemorial in different and remote countries.

Our nature is so formed, that although we are inclined to avoid what is hurtful, yet when the evil is to be undergone, we are impatient to get through with it, in order that the rest of our lives may not pass in the fearful apprehension of what is to arrive, and we wish this period to be when we are in the greatest force to combat with the disease, and can spare the readiest the time requisite for its duration.

This probably suggested the idea of inoculating from the pustule, as containing the germ of this disease; like as ignorant people are seen daily to carry their children within the reach of infection, in order, as they plead, "to have it over, and at a good age;" and the practice would become popular by observing that inoculation produces a milder sort of disease, not one in five hundred dying in this way; whereas of the natural small-pox the mortality was one out of three or four, that is more than thirty  
in

in an hundred, a measure which therefore multiplies greatly the chances of recovery.

The early practice of inoculation, as we might expect, would be extremely awkward.

In China they take the skins of some of the dried pustules which are fallen from the body, and put them into a porcelaine bottle, stopping the mouth of it very close with wax. When they intend to transfer this disease, they mix three or four of these scabs with a grain of musk, enfolding it in a tent of cotton, which they put up the nostrils.

This practice probably arose from the idea that the small-pox was taken up by these parts. Nor were they mistaken in their expectation.

The small-pox as certainly followed, but with less danger than the casual; yet still with more distress than was requisite.

This was proved, says the learned Dr. Mead, by me, when making an experiment with a view to this purpose. For when, in the year 1721, by order of his sacred Majesty, both for the sake of his own family, and of his subjects, a trial was to be made upon seven condemned malefactors, whether or not the small-pox could safely be communicated by inoculation; I easily obtained leave to make the Chinese experiment in one of them. There was among those, who were chosen out to undergo the operation, a young girl of eighteen years of age; into whose nostrils I put a tent wetted with matter taken out of ripe pustules. The event answered;



answered ; for she, in like manner with the others, who were infected by incisions made in the skin, fell sick, and recovered ; but suffered much more than they did, being, immediately after the poison was received into the nose, miserably tormented with sharp pains in her head, and a most severe fever."

Inoculation in one spot of the world arose from another cause.

It is a well-known fact, although it must stagger the belief of fathers and mothers, that there exists a class of people in Georgia, who regularly train up their children for sale and prostitution. Forming the speculation, if their daughter has a fine form, and fair complexion, the young Circassian is first inoculated, and if it succeeds, some expence is afterwards laid out on external accomplishments, as music and dancing ; and when the bashful bloom of youth sits on the cheek, the fair virgin is carried to the shambles of a Turkish market, and a price is given, varying according to the fancy of the purchaser, who confines her eve rafter in the harem of a seraglio, never more to behold the face of any other than this her lord and master, and his numerous concubines. Should her features be disfigured, all education is omitted, and she continues in the humbler and happier sphere of subaltern life. Such were the sordid considerations which first induced the natives of Georgia to inoculate,

B

and



and the method could not fail to be told to the Turks, whose religion prevented them from adopting the practice from better motives; nevertheless it was performed by the Greeks both at Constantinople and Smyrna.

We have a lively description of their manner by Lady Mary Wortley Montague. She writes as follows. “The small-pox, which is so fatal and so general amongst us, is here entirely harmless, by the invention of *ingrafting*, which is the term they give it. There is a set of old women who make it their business to perform the operation every autumn here, in the month of September. When the great heat is abated, people send to one another to know if any of their family has a mind to have the small-pox; they make *parties* for this purpose, and when they are met, (commonly fifteen or sixteen together,) the old woman comes with a nutshell full of the matter of the best sort of small-pox, and asks where they please to be inoculated. She immediately pierces that part you offer to her with a large needle, (which gives you no more pain than a common scratch,) and puts into the part as much matter as can lie upon the head of her needle, and after that binds up the little wound with a hollow bit of shell; and in this manner makes four or five incisions. The Grecians have commonly the superstition of making a scratch in the middle of the forehead, one in each arm, and one in the breast,

to

to make the sign of the cross; but this has no very ill effect, all those wounds seldom leaving scars, and is not done by those who are not superstitious, who choose to have them in the leg or that part of the arm that is concealed. The children, or young patients, play together all the rest of the day, and are in perfect health to the eighth. Then the fever begins to seize them, and they keep their beds two days, very seldom more. They have very rarely above twenty or thirty in their faces, which never mark, and in eight days after they are as well as before their illness. Every year *thousands* undergo this operation; and the French ambassador says, pleasantly, that they take the small-pox here by way of diversion. *There is scarce an example of any one that has died in it; and you may believe I am well satisfied with the safety of this experiment, since I intend to try it on my dear little son. I am patriot enough to take pains to bring this useful invention into fashion in England; and I should not fail to write to some of our doctors very particularly about it, if I knew any of them that I thought had virtue enough in them to destroy such a CONSIDERABLE BRANCH of THEIR REVENUE, for the GOOD OF MANKIND.—Perhaps, if I live to return, I may, however, have courage to wage WAR with them.*"

This communication, stating the advantages of inoculation upon indubitable authority, as well as similar accounts of the success of this new practice,

orally given by merchants and others, who, from business or pleasure, had visited the Ottoman metropolis, could not fail greatly to interest many in this country. Indeed, any scheme much less plausible than the present, which promised to disarm of its terrors so universal and destructive a distemper as the small-pox, must have had a strong claim to the attention and patronage of any nation. But an English example was required before the practice could be adopted, and this was fortunately soon exhibited.

Mr. MAITLAND, surgeon to the Honourable Wortley Montague in his diplomatic character at the Ottoman court, informs us, that the ambassador's lady, being convinced of the advantages of inoculation, was determined that her only son, then six years of age, should undergo the operation. For this purpose she desired Mr. Maitland to procure the variolous matter from a proper subject; which being done, an old Greek woman, many years in the constant habit of inoculating, was employed to insert it. "But," says Mr. M. "the good woman went to work so awkwardly, and by shaking of her hand put the child to so much torture with her blunt and rusty needle, that I pitied his cries, and therefore inoculated the other arm with my own lancet, and with so little pain to him, that he did not in the least complain of it." The consequent disease was very mild, there  
being

being only about fifty pustules ; and it may be remarked, that this inoculation, which was performed at Pera, near Constantinople, in the month of March 1717, (if the mode of buying the small-pox be excepted,) was the first ever practised upon any *English subject*.

As soon as inoculation came to be introduced into England, as a thing wholly *new*, it was found that this practice had existed in South Wales, as far back as tradition could be traced, an account of which we have in the Philosophical Transactions for the year 1722.

Mr. Wright writes to Mr. Bevan as follows :  
 “ I received yours the 9th inst. and, in answer to it, will readily give you all the satisfaction I can in relation to a very ancient custom in this country, commonly called *buying the small-pox* ; which, upon strict inquiry since I had your letter, I find to be a *common practice*, and of a *very long standing*, being assured by persons of unquestionable veracity and of advanced age, that they have had the small-pox communicated to themselves in this way, when about sixteen or seventeen years of age : they then being very capable of distinguishing that distemper from any other, and that they have parted with the matter contained in the pustules to others, producing the same effects.”

“ There are two large villages in this county, near the harbour of Milford, more famous for this custom than any other, namely, ST. ISHMAEL’S and



MARLOES. The old inhabitants of these villages say, that it has been a *common practice* with them *time out of mind*; and what was more remarkable, one W. Allen, of St. Ishmael's, *ninety* years of age, who died about six months ago, declared to some persons of good sense and integrity, that this practice was used all his time, and that he got the small-pox that way. These, together with many other informations I have met with, from all parts of the country, confirm me in the belief of its being a very *ancient practice* among the common people; and to prove that this method is still continued among us, I will give you the relation of an elderly woman, a midwife, (who accidentally came into company when your letter was reading,) whose name is Joan Jones, aged *seventy* years, of good credit, and perfect memory. She solemnly declares, that about fifty-four years ago, having the small-pox, one Margaret Brown, then about twelve or thirteen years of age, bought the small-pox of her; and she further says, that she has known this way of procuring the small-pox practised from time to time above *fifty years*; that it had been lately used in her neighbourhood; and she knows but of *one* dying of the said distemper when communicated after the method aforesaid, which accident happened within the two last years."

The manner of *inoculating*, or *buying the small-pox*, here alluded to, was not always the same, but was varied by different persons. Dr. Williams says,

"They



“ They either rub the matter, taken from the pustules when ripe, on several parts of the skin of the arms, &c. or prick those parts with pins, or the like, being first infected with the inoculating matter. Mr. Owen, and five of his school-fellows, “ scraped the skin with a knife until the blood began to flow, before they applied the variolous pus.” Others produced the distemper, “ by holding a certain number of dried pustules for a considerable time in the palm of the hand.”

We are also informed, that the inhabitants of the *Highlands of Scotland*, for many ages, have had recourse to a species of *inoculation*, performed by tying worsted threads, moistened with variolous matter, round the wrists of their children.

This vulgar or domestic custom of inoculating the small-pox, likewise prevailed in many other parts of *Europe*, and in various countries of *Asia* and *Africa*; and, what is highly curious, in several of these distant nations, the practice was, as in Wales, termed BUYING THE SMALL-POX. For it was superstitiously imagined, that inoculation would not produce the proper effect unless the person, from whom the variolous matter was taken, received a piece of money, or some other article in exchange for it, from those whom it was intended to infect.

At *Naples*, Monsr. de la Condamine, in 1769, learned that *inoculation* had been secretly used by the people there from *time immemorial*: and the celebrated P. Boscowich assured him it was practised

in the same manner at *Pavia*, where the nurses often inoculated, without the parents' knowledge, the infants intrusted to their care. For this purpose they commonly rubbed the palm of the hand of the child with fluid variolous matter, recently taken from a pustule.

The practice of *buying* or *inoculating* the small-pox prevailed also in *some of the provinces* of France, especially in *Auvergne* and in *Perigord*; and still more generally among the ignorant peasantry in many parts of *Germany*, *Denmark*, and *Sweden*.

In the *northern parts of Europe* this practice seems to have been less complete than that adopted on the southern and eastern coasts of the *Mediterranean Sea*. For in *Barbary* and in the *Levant*, though they placed implicit confidence in the efficacy of *buying* or purchasing the variolous pustules; yet their method of performing the operation was such as could not fail of producing the inoculated small-pox. *The infectious matter was inserted at a small opening made in the fleshy part of the hand, between the thumb and forefinger*; and, according to Dr. Shaw, "the person who is to undergo the operation, receives the infection from some friend or neighbour, who has a favourable kind, and who is intreated to *sell* two or three of his pustules, for the same number of nuts, comfits, or such like trifles."

This account of inoculation differs not materially from that practised in the kingdoms of *Tri-*  
*poli*,

*poli, Tunis, and Algier*; as related by his excellency Cassim Aga, in 1728, when ambassador to our court. He says, "If any one has a mind to have his children inoculated, he carries them to one that lies ill of the small-pox, at the time when the pustules are come to full maturity. Then the father makes an incision on the back of the hand, between the thumb and forefinger, and puts a little of the matter, squeezed out of the largest and fullest pustules, into the wound. This done the child's hand is wrapped up in a handkerchief, to keep it from the air, and he is left to his liberty, till the fever arising confines him to his bed, which commonly happens at the end of a few days. This practice is so innocent, and so sure, that out of 100 persons inoculated not *two* die; whereas on the contrary, out of 100 persons that are infected with the natural small-pox, there die commonly about *thirty*. Inoculation is so *ancient* in the kingdoms of *Tripoli, Tunis, and Algier*, that nobody remembers its first rise; and it is not only practised by the inhabitants of the towns, but also by the *wild Arabs*."

That this practice is very common with the Arabs, and is by them also called *buying the small-pox*, fully appears from Dr. Russell's communication to the Royal Society. About the year 1758, while this ingenious physician was on a visit at a Turkish harem, a lady happened to express much anxiety for a child who had not had the small-pox; the distemper at that time being frequent in the city.



city. None of the ladies in the company had ever heard of *inoculation*, so that the Doctor having once mentioned it, was obliged to enter into a detail of the operation, and the peculiar advantages attending it. Among the female servants in the chamber was an old Bedouin *Arab*, who having heard the Doctor with great attention, assured the ladies, “that the account given by the Doctor was upon the whole a just one; only that he did not seem to know well the way of performing the operation, which she asserted should not be done with a lancet but with a needle:” she added, “that she herself had received the disease in that manner when a child, and *had inoculated many*; that the whole art was well known to the *Arabs*, and that they termed it *buying the small-pox*.” In consequence of this hint, Dr. Russell made further inquiries, by which he discovered, “that inoculation had been of long standing among them. They indeed did not pretend to assign any period to its origin; but persons seventy years old and upwards, remembered to have heard it spoken of as a *common custom* of their ancestors, and they believed it to be of as *ancient a date* as the disease itself.”

Dr. Russell was likewise assured, “that inoculation was equally common among the *eastern Arabs*, being practised not only at *Bagdad* and *Mosul*, but also at *Bussora*; and that at *Mosul* particularly, when the small-pox first appeared in any district of the city, it was a custom sometimes to give notice by a  
public

public cryer, in order that those who were so inclined might take the opportunity to have their children *inoculated*."

"In *Armenia*," Dr. Russell says, "the Turkoman tribes, as well as the Armenian Christians, have practised inoculation *since the memory of man*; but, like the Arabs, are able to give no account of its *first introduction* among them. At *Damascus*, and all along the coast of *Syria* and *Palestine*, inoculation has been long known. In the *Castravan* mountains it is adopted by the Drusi as well as Christians. Whether the Arabs of the desert to the south of Damascus are acquainted with this manner of communicating the small-pox, I have not," says this physician, "hitherto been able to learn; but a native of *Mecca*, whom I had occasion to converse with, assured me that he himself had been inoculated in that city."

From the various accounts of *inoculation* here related, it is *highly curious* that in so many *distant nations*, differing widely in manners, customs, laws, habits, and religion, this art should be generally known by the name of "BUYING THE SMALL-POX." It is also to be considered as a remarkable proof of its *great antiquity*, that the less civilized part of mankind, or people of the most simple and uniform habits, have possessed this salutary custom the longest\*.

\* For a further account of this interesting inquiry, vide the elaborate History of Inoculation by Dr. Woodville, Physician to the Small-pox Hospital;—a work replete with curious facts and useful instructions.

SECT.



## SECT. III.

THE FORMAL ESTABLISHMENT OF INOCULATION  
IN ENGLAND.

INOCULATION of the small-pox was first *regularly* adopted in England in the month of April 1721; and it was owing to the enlightened and philosophic mind of Lady Mary Wortley Montague, that GREAT BRITAIN had the honour of adopting this practice the first among the nations of Europe. For after this celebrated lady had witnessed the good effects of inoculation upon her son at Pera, she determined also to try it upon her daughter, then an infant of three months old. The particulars of the case are stated by Mr. Maitland in the following manner:—"This noble lady sent for me last April, and when I came, she told me she was now resolved to have her daughter inoculated, and desired me to find out matter for that purpose. I pleaded for the delay of a week or two, the weather being then cold and wet; for indeed I was unwilling to venture on an experiment altogether new and uncommon in England, in a cold season: though I am now convinced it may with due care be practised at all times and seasons, but still with more safety in the temperate and favourable. I  
also,

also prayed, that any two physicians, whom they thought fit, might be called in, not only to consult about the health and safety of the child, but likewise to be eye-witnesses of the practice, and contribute to the credit and reputation of it. In the meantime, having found proper matter, I engrafted it in both arms; the child was neither blooded nor purged before, nor indeed was it necessary, considering the very cool regular diet she had ever been kept to from her infancy. She continued easy and well, without any sensible alteration, bating the usual little spots and flushings, till the tenth night, when she was observed to be a little hot and feverish. An old apothecary in the neighbourhood being then called, prudently advised not to give the child any medicine, assuring them there was no danger, and that the heat would quickly abate, which accordingly it did; and the small-pox began to appear next morning. Three learned physicians of the College were admitted, one after another, to visit the young lady; they are all gentlemen of honour, and will on all occasions declare, as they have hitherto done, *that they saw Miss Wortley playing about the room, cheerful and well, with the small-pox raised upon her; and that in a few days after she perfectly recovered of them.* Several ladies and other persons of distinction visited also this young patient, and can attest the truth of this fact."

The very favourable event of this first trial of the Byzantine mode of inoculation in Britain,  
and

and also that of a second, made on the son of Dr. Keith, which immediately followed, was soon generally known in London, and consequently communicated to the different parts of the kingdom. *For an art so new and interesting to the public, could not fail to excite the attention of people of all ranks, and more especially those of the medical profession, on whose concurrent opinions the establishment of this foreign practice here was ultimately to depend.*

However, though these prosperous instances of inoculation had hitherto confirmed the reports of its success at Constantinople; and though the practice had been introduced among the English by a woman who, from her brilliant accomplishments, masculine understanding, and great influence in the fashionable circles, was, above all others, most likely to be followed as an example in the metropolis; yet this valuable art was still regarded with a suspicious caution, and several months elapsed before a *third trial* of it was made in London.

Even *four months* after the inoculation of Miss Wortley, this practice was still viewed in such a dubious light, that it was determined that several culprits, then in Newgate, who had forfeited their lives to the laws of their country, should, on submitting to be inoculated, receive full pardon by the royal prerogative: a proposition which is said by some to have been suggested by the College of Physicians to their Royal Highnesses the Prince and Princess of Wales; but Sir Hans Sloane states it  
to

to have wholly originated with the *Princess of Wales*. Mr. Maitland was accordingly requested to perform the operation, which he declined; but lest the opportunity should be lost, Sir Hans wrote to Dr. TERRY, at Enfield, who had practised physic in Turkey, to know his opinion concerning inoculation. The Doctor replied, that he had seen the practice there among the Greeks encouraged by the patriarchs, and that not *one* in *eight hundred* had died in consequence of the operation. Upon which inoculation was performed upon the following six criminals at Newgate, on the ninth day of August 1721, in the presence of several eminent physicians and surgeons.

Mary NORTH	- - - - -	36 years old
Ann TOMPION	- - - - -	25
Elizabeth HARRISON	- - - - -	19
John CAWTHERY	- - - - -	25
John ALCOCK	- - - - -	20
Richard EVANS	- - - - -	19

All these six, who were inoculated by making incisions in both arms, and on the right leg, obtained a remission of the sentence of the law on very easy terms; for in ALCOCK, on whom the operation produced the greatest crop of pustules, the number did not exceed *sixty*; and EVANS, having had the small-pox the preceding year, of course did not receive the disease a second time.

These



These experiments, no doubt, tended much to the encouragement of inoculation, which in so many instances had now fully answered the utmost expectations of its patrons. The trials of it, however, were yet considered by the faculty as still *too few* to ascertain the general safety and advantage of the practice.

Early in the spring of the year 1722, inoculation began to be adopted in various parts of England; and by order of her Royal Highness the *Princess of Wales*, it was practised first upon *six*, and afterwards upon *five*, *charity children*, belonging to the parish of Saint James's. The success with which these trials were attended, induced her Royal Highness to cause Princess AMELIA and Princess CAROLINA to be inoculated on the 19th of April 1722; the former being then *eleven* and the latter *nine* years of age. They were inoculated by Serjeant Surgeon Amyand, under the direction of Sir Hans Sloane: but before her Royal Highness determined upon the inoculation of the *Princesses*, she consulted Sir Hans respecting the propriety and safety of the measure. He "told her Royal Highness, that by what appeared in the several essays, it seemed to be a method to secure people from the great dangers attending the small-pox in the *natural way*. That the preparations by diet, and necessary precautions taken, made that practice very desirable; but that not being certain of the *consequences* which might happen, he would not persuade  
nor



nor advise the making trials upon patients of such importance to the public." The princess then asked him "if he would *dissuade her from it*:" to which he answered, "he would not in a matter *so likely to be of such advantage*." Her reply was, "that she was *then resolved it should be done*;" and ordered Sir Hans to go to the King (George the First) who had commanded the Doctor to wait on him upon the occasion; and it being agreed upon between his Majesty and Sir Hans, the two Princesses were inoculated.

Both these younger branches of the Royal Family passed through the small-pox in a *very favourable manner*: and inoculation, in consequence of this illustrious example, was now making a rapid progress, when the number of persons inoculated in England amounted to 182, *viz.*

By Dr. Nettleton	-	-	-	-	-	61
Mr. Maitland, Surgeon	-	-	-	-	-	57
Claud Amyand, Esq. Serjeant Surgeon	-	-	-	-	-	17
Dr. Dover	-	-	-	-	-	4
Mr. Weymish, Surgeon	-	-	-	-	-	3
The Rev. Mr. Johnson	-	-	-	-	-	3

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In or near London - - 145

Brought over—in or near London	145
Mr. Smith, Surgeon, and Mr. Dymer, Apothecary at Chichester	- - - 13
Dr. Brady, at Portsmouth	- - - 4
Mr. Waller, Apothecary at Gosport	- 3
A Woman at Leicester	- - - 8
Dr. Williams, at Haverfordwest	- - 6
Two other persons near the same place	2
Dr. French, at Bristol	- - - - 1
<hr/>	
In all	- - - 182

Out of this number (says Dr. Jurin) the opposers of inoculation affirm, that *two* persons *died* of the inoculated small-pox; the favourers of this practice maintain, that their death was occasioned by *other causes*.

If, to avoid dispute, these two be allowed to have died of inoculation, we must estimate the hazard of dying of the inoculated small-pox, as far as can be collected from our own experience at present, to be that of *two* out of 182, or *one* out of 91; since which time, by a proper preparation by medicine, the favourable chances have been yet more increased.

In the natural way the chances are as *one* to 6, which is a wonderful odds in favour of inoculation.

Although

Although the advantages of inoculation were great, in the *first place*, as it gave every prospect of recovery in this otherwise often fatal disease, and *secondly*, security in futur<sup>e</sup>, which removed the terror of apprehension, which, like a sword hung over the head, and was sure often to present itself to the scared imagination, yet was its first introduction, from the opposition it experienced, extremely slow.

During the year 1723, the practice, however, of inoculation made a considerable progress in England. It was adopted not only among the nobility of the first rank, but (which still more tended to its promotion) it received encouragement from the heads of the church, having been introduced into the family of the Bishop of Winchester, and also into that of that learned divine Dr. Calamy. Whence the number of the inoculated *that year*, far exceeded the numbers in the two preceding years taken together. It amounted to 292, which being added to 182, makes the whole number of the inoculations in the years 1721, 1722, and 1723, to be 474, out of which number, as will be shewn in the next page, although the treatment was bad, the hot regimen being then in fashion, only *nine* died.

*The Result of these Cases are represented in the annexed Table, taken from Dr. Jurin.*

AGES.	Persons inoculated.	Had the Small-pox by inoculation.	Had an imperfect fort.	Had no effect.	Supposed to have died of inoculation.
Under One Year - -	11	11	0	0	0
One to Two - - - -	15	14	0	1	2
Two to Three - - - -	31	31	0	0	1
Three to Four - - - -	41	38	0	3	1
Four to Five - - - -	33	31	0	2	1
Five to Ten - - - - -	140	137	1	2	2
Ten to Fifteen - - - -	82	76	0	6	0
Fifteen to Twenty - -	56	50	1	5	2
Twenty to Fifty-two	62	50	3	9	0
Age unknown - - - -	3	2	0	1	0
Total - - -	474	440	5	29	9

Hence we find, that of the 474 persons first inoculated in England, *nine* died, and their deaths were not unjustly suspected to have happened in consequence of inoculation.

Thus inoculation triumphed, under the auspices of *royal patronage*; and Dr. Wagstaffe, after his invidious remark, "*that posterity will scarcely be brought*



brought to believe, that an experiment, practised only by a few ignorant women, should so far obtain in one of the politeſt nations in the world, as to be received into the Royal palace," had the mortification to find it introduced a "*ſecond time*" into the Royal family: For their Royal Highneſſes Prince FREDERICK and Prince WILLIAM were both inoculated *this year*. The former, who reſided at Hanover, and was then eighteen years of age, ſubmitted to be inoculated by Mr. Maitland on the firſt of May 1724, and the event was extremely favourable; his Royal Highneſs not having more than from eleven to eighteen puſtules. The latter, was about the ſame time inoculated here by Surgeon Amyand, under the direction of Sir Hans Sloane, who likewiſe paſſed through the ſmall-pox without any alarming or even troubleſome ſymptom.

But what tended ſtill more effectually to eſta-  
bliſh the practice of inoculation, was the ſubſequent  
declaration of the College of Phyſicians, *viz.*

"THE COLLEGE HAVING BEEN INFORMED, THAT  
FALSE REPORTS CONCERNING THE SUCCESS OF INO-  
CULATION IN ENGLAND, HAVE BEEN PUBLISHED  
IN FOREIGN COUNTRIES, THINK PROPER TO DE-  
CLARE THEIR SENTIMENTS IN THE FOLLOWING  
MANNER; *viz.* THE ARGUMENTS WHICH AT THE  
COMMENCEMENT OF THIS PRACTICE WERE URGED  
AGAINST IT, HAD BEEN REFUTED BY EXPERIENCE;  
THAT IT IS NOW HELD BY THE ENGLISH IN GREATER  
ESTEEM, AND PRACTISED AMONG THEM MORE

EXTENSIVELY THAN EVER IT WAS BEFORE; AND THAT THE COLLEGE THINKS IT TO BE HIGHLY SALUTARY TO THE HUMAN RACE."

The words of this famous declaration are, "Quoniam collegio nuntiatum fuit, falsos de variolarum insitiarum in Anglia successu et existimatione apud exteras gentes nuper exiisse rumores, eidem collegio sententiam suam de rebus hisce ad hunc modum declarare placuit: videlicet, argumenta, quæ contra hanc variolas inferendi consuetudinem in principio afferebantur, experientiam refellisse; eamque hoc tempore majori in honore apud Anglos haberi, magisque quam unquam antea inter eos nunc invalescere; atque humano generi valde salutarem esse existimare. *Vide Taylor Orat. Harv. page 29.*

We may reckon upon inoculation as from this time established in England, although it be not universally practised\*.

\* Vide Dr. Woodville's History of Inoculation.

## SECT. IV.

WHETHER SOCIETY AT LARGE HAS BENEFITED BY  
THE INTRODUCTION OF INOCULATION?

SOME may smile at my quoting the authority of Dr. Buchan, author of the "Domestic Medicine," a work said to have produced much domestic mischief \*; but I know of no writer, who has more sensibly treated on the duties of mankind, and whose advice relative to the preservation of health †, deserves a more general attention.

"As the small-pox," says this benevolent writer, "has now become an epidemical disease in most parts of the known world, no other choice remains but to render the malady as mild as possible. This is the only manner of extirpation now left in our power; and, though it may seem paradoxical, the artificial method of communicating the disease, *could it be rendered universal*, would amount to nearly the same thing as rooting it out. It is a matter of small consequence, whether a disease be entirely extirpated, or rendered so mild as neither to destroy life nor hurt the constitution; but that this may be done by inoculation, does not now ad-

\* Dr. Beddoes thus humourously speaks of it.

† The introduction "On the common Causes of Disease," by this popular writer, is a chef d'œuvre.

mit of a doubt. The numbers who die under inoculation hardly deserve to be named. In the natural way, one in four or five generally dies; but by inoculation not one of five hundred. Nay, some can boast of having inoculated thousands without the loss of a single patient."

"To this advantage we might add, that such as have not had the small-pox in the early period of life, are not only rendered unhappy, but likewise, in a great measure, unfit for sustaining many of the most useful and important offices."

"Few people would chuse even to hire a servant who had not had the small-pox."

"How could a physician or a surgeon, who had never had the small-pox himself, attend others under that malady?"

"How deplorable is the situation of females, who arrive at mature age without having had the small-pox! A woman with child seldom survives this disease: and if an infant happens to be seized with the small-pox upon the mother's breast, who has not had the disease herself, the scene must be truly distressing!"

"If she continues to suckle the child, it is at the peril of her own life; and if she weans it, in all probability it will perish!"

"How often is the affectionate mother forced to leave her house, and abandon her children, at the very time when her care is most necessary? Yet should parental affection get the better of her fears,



fears, the consequences would often prove fatal. I have known the tender mother and her sucking infant laid in the same grave, both untimely victims to this dreadful malady. But these are scenes too shocking to dwell on."

"Let parents who run away from their children to avoid the small-pox, or who refuse to inoculate them in infancy, consider to what deplorable situations they may be reduced by this mistaken tenderness."

"I have often wished," adds Dr. Buchan, "to see some plan established for rendering this salutary practice *universal*; but am afraid I shall never be so happy. The difficulties indeed are many; yet the thing is by no means impracticable. The aim is great; no less than saving the lives of *one-fourth part of mankind*. What ought not to be attempted in order to accomplish so desirable an end?"

His plan is,

- 1st. "Removing of prejudices by the clergy.
- 2dly. The Faculty inoculating, and attending gratis, or if these refuse, then the clergy to do it.
- 3dly. Douceurs to be given to mothers by government for having their children inoculated.
- 4thly. And should both the faculty and clergy shrink from the unprofitable task, [as the Doctor foresees would probably be the case,] for parents *themselves* to perform the operation on their children."

"We have been more full," adds this benevolent writer

writer upon this subject, “because the benefit of inoculation cannot be extended to society by any other means than by making the practice *general*. While it is confined to a *few*, it must prove hurtful to the *whole*. By means of it *the contagion* is spread, and is communicated to many who might otherwise have never had the disease. Accordingly it is found *that more die of the small-pox now than before inoculation was introduced*; and this important discovery, by which alone more lives might be saved than by all the other endeavours of the Faculty, is in a great measure lost by its benefits not being extended to the whole community.”

The great and learned Dr. Heberden, in his observations on the increase and decrease of different diseases, observes, “that he examined carefully the bills of mortality, and comparing the destruction occasioned by the *small-pox* among our countrymen *before* and *since* inoculation, reluctantly was brought to this melancholy conclusion, that at the present period the *proportional increase* of deaths from this disease was as *five* to *four*.”

## SECT. V.

## OBSTACLES TO A GENERAL INOCULATION.

THE obstacles to a general inoculation are such, as in all probability to prevent a plan of this kind from ever being carried into execution.

1st. *The prejudices of the lower orders of mankind.*

The cold calculator might estimate the advantages of inoculation to society, and calculate the comparative number of deaths from the natural small-pox, and artificial disease; but yet as he must allow that *some* die under inoculation, the fond mother naturally would thus argue within herself: "Can I bring my mind to consent to what may bereave me of my dear child?—if he were to die, how shall I forgive myself?—am I sure, that I am not anticipating an evil that may never arrive?—where is my right to do this?—is he certain to catch the small-pox?—and were this to happen, and he were, alas! to be taken from me at a later period, I shall then, relying on Providence, have nothing to reproach myself with."

In

In vain will the philosopher oppose to these natural suggestions of the weak mind,

1. That were the child to die under inoculation, the mother has truly nothing to upbraid herself with, having only done her duty.
2. And had not the ALMIGHTY designed inoculation to be performed, it would not be endowed with the extraordinary virtue it possesses of preventing the small-pox, and have a nature infinitely milder than the other.

The more ignorant the person, the more stubborn against the conviction of reason, and, as Hudibras says,

“ She who’s persuaded against her will,  
“ Is of the same opinion still.”

So here, no force of argument, could bring over the unwilling, and words are only lost in the attempt, and a large class of mankind will be *always* found adverse to inoculation, the possibility of death arising to the person inoculated, being the stumbling-block against its universal acception.

2dly. *The chances that infants at the breast have of dying; early age being found most unfavourable to the insertion of the small-pox.*

A fact which soon drew the attention of many eminent medical writers, who endeavoured to account for this circumstance. Thus Dr. Percival.

“ I. The number of diseases to which infants are liable, render them unfit subjects for inoculation. HIPPOCRATES, two thousand years ago, remarked,  
*ætatibus*



*ætatibus, morbosissimi sunt juniores.* And when we consider the great and sudden changes, both external and internal, which they undergo at birth; the laxity and wonderful delicacy of their frame; and their extreme irritability perhaps depending upon it; the copiousness of glandular secretions, with the difficulty of preserving that equilibrium, the least deviation from which affects them; it is matter of real astonishment that life itself can be supported, under a series of such apparently unfavourable circumstances. Scarcely hath the little stranger been ushered into the world, but he discovers signs of indisposition, by his restlessness, anxiety, crying, and vomiting; by the swelling of his belly; and sometimes by convulsions. These symptoms arise from the load of *meconium* with which the stomach and bowels are oppressed, and generally cease when those organs have been gently evacuated. The jaundice next succeeds, and is sometimes complicated with a very acrimonious state of the fluids, as appears by the eruption of little red pustules, with which the skin is everywhere loaded. The thrush, watery gripes, and convulsions, observe no regular order of time, but attack most infants, either singly or collectively, according as they are more or less obnoxious to the causes which produce them. The quick growth of children, in the first period after birth, is likewise a source of numerous ailments; notwithstanding the provisions which nature hath made, to guard against the inconveniences resulting

from it, by the laxity of the glandular system. And as most of these causes continue to exert their influence after birth, though in a less degree, the increment of the young animal proceeds apace, and redundances are formed, which in a healthy state are carried off by one or other of the glandular excretions. But a deficiency or excess in any of these, necessarily produces diseases. And in such feeble, delicate, and irritable subjects, the equilibrium cannot long be preserved. If they are defective, all the complaints which arise from plenitude ensue; the child grows feverish, dull, and comatose; his stomach is disordered; his bowels are oppressed with wind; and if his belly be constipated, he falls into convulsions. 'On the other hand, if they are excessive, a *diarrhœa* is produced; *aphthæ* and severe gripes succeed; and the violent irritation seldom fails to occasion epileptic fits. From this short view of the first period of infancy, I think it must appear evident, that inoculation is ill adapted to that tender season of life. Nature, feeble and irritable as she then is, can scarcely struggle with the diseases to which she is ordinarily exposed. It is therefore equally cruel and unjust to add to the number with which she is already oppressed. For it is demonstrable from the bills of mortality, that two thirds of all who are born, live not to be two years old; and I think it is more than probable, that a considerable proportion of these die under the age of six weeks."

“ II. The fears and anxiety of the mother, excited at a time when her strength hath been exhausted by the pains of labour, and when every uneasy impression should be cautiously avoided, cannot fail to injure her milk. And this is a powerful objection to the early inoculation of infants. If a hired nurse be employed, her milk may disagree with the child, she may fall into some disease during the time of inoculation, may be guilty of excess in eating or drinking, or may be under the influence of violent passions; each of which will aggravate the symptoms, and increase the danger of the artificial distemper under which the infant labours.”

“ III. It hath been observed, by a very able and experienced practitioner, that young children have usually a larger share of pustules from inoculation, than those who are a little farther advanced in life; and that, from this circumstance, so many have died, as to discourage the practice of ingrafting the small-pox on such delicate subjects. This fact is not easy to be explained. Whether the greater irritability of infants subjects them to be more affected with the variolous *miasma* than children of two or three years old; or whether the larger eruption, to which they are liable, be owing to the proportionably greater quantity of their fluids; I will not presume to determine. Both causes may possibly conspire to produce this effect; the former by exciting a quicker and increased contraction of the heart and vascular system; the latter by affording a more  
copious

copious *pabulum* for the variolous ferment. By the same principles we may perhaps account for the greater virulence of the lues venerea in infancy, than in the more advanced stages of life."

" IV. A considerable number of those who die of the natural disease, before the expulsion of the variolous eruption, are infants, or very young children. This does not arise, as Dr. KIRKPATRICK supposes, from the extreme weakness of the *vis vitæ* of infants; for the contraction of their hearts is proportionably stronger than in adults, as the quickness of their growth evinces; but from the high degree of irritability with which their nervous system is endued. Hence the convulsive paroxysms, which often precede the appearance of the pustules, and which, though regarded by SYDENHAM as no unfavourable signs, are always alarming, and, when they happen to very young infants, are frequently fatal."

" V. If the number of pustules be so great in the mouth or throat as to obstruct suction, the disease, in all probability, will prove fatal. Even a few pocks in those parts are highly troublesome and dangerous to infants; for besides the pain and restlessness which they produce, they often terminate in ill-conditioned ulcers. Under such circumstances the mute wailings, or shrieks, of an infant occasion equal embarrassment and distress."

" VI. Those who are affected with cutaneous diseases have been generally regarded as unfavourable subjects



subjects of inoculation. Infancy, therefore, which is seldom unattended with eruptions on the skin, must be an improper period for receiving the small-pox by ingraftment."

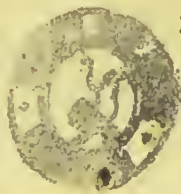
"VII. The thickness of the teguments of infants, which arises from the quantity of fluids interposed between their fibres, by which the skin is rendered soft and œdematous to the touch, and their perspiring less than children who are capable of using exercise, are further objections to very early inoculation."

"VIII. But the most forcible argument against this practice, is deduced from the ill-success which hath attended infant inoculation in general. For it appears by Dr. JURIN's account of the progress of inoculation in Great Britain from 1721 to 1726, and by Dr. SCHEUCHZER's continuation of it to 1728, that of fifty-eight children under two years old, who received the small-pox by ingraftment, *six* died; whereas of two hundred and twenty-one, inoculated between the ages of two and five, only *three* died."

"It is too common an opinion," says that able writer, Dr. Underwood, in his treatise on the Diseases of Children, "that a very young infant, sucking at the breast, is the fittest subject for inoculation; and medical people have some difficulty in persuading parents to the contrary. Children are then said to be clear from humours, their blood mild and balsamic, their food innocent, and they are free

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from



from all violent passions of the mind. But all these advantages may be counterbalanced by the delicacy of their frame, their disposition to spasm, and their inability to struggle with a severe attack of the disease, if it should chance to fall to their share. And such, indeed, are the facts: infants may have the small-pox very lightly, whether taken naturally or from inoculation, though in both there are a few instances of their expiring in a fit at the time of the eruption; but they seldom get through the disease, if they are full, or it proves of the confluent or malignant kind. And this furnishes a peculiar objection to inoculating infants at the breast, which arises from their necessarily lying so much on the arm of the mother or the wet-nurse, especially in the night; the heat exposing them to a much more copious eruption than children who are weaned. This I have seen clearly exemplified in the instance of a child whose mother could suckle only with the right breast; the consequence was, that the left side of the child was perfectly loaded with the eruption, (though the pock was of the distinct kind) whilst the other had only a moderate sprinkling. The child, however, sunk under the secondary fever at the end of five or six weeks, though turned of two years old; the *only* child I have known to die of inoculation at so advanced an age. A similar instance is related by Mr. Mofs; who not being able to prevail on a young woman whom he had inoculated, to keep her feet (which were very cold)

out

out of the warm ashes of a hearth-fire; at the time of the eruption; they were, in consequence, so loaded with it, as to appear one continued blister; though the disease was very distinct, and went on very favourably in other parts."

"I am aware that many children are inoculated very young, and even in the month, and generally with very good success; but the frequency of this practice, among eminent surgeons, is owing to the urgent solicitation of parents, and their fear of contagion. I cannot therefore avoid saying, that however few may die under inoculation, under any circumstances, the fact is, that the far greater proportion that I happen to have had an account of, is amongst infants under six months old. A remarkable proof of this disproportion appeared lately under a general inoculation at *Luton*, during the progress of a malignant small-pox, which carried off one half of those who were attacked by it in the natural way. In the midst of this fatality, twelve hundred and fifteen paupers were inoculated, through the humanity of the Hon. and Rev. Mr. WILLIAM STUART, many of whom refused all preparatory medicines, and were besides addicted to the use of strong liquors: nevertheless, out of the *twelve hundred and fifteen* only *five* died—all of whom were *infants under four months old*. Seven hundred adult people of better condition, in the same neighbourhood, were inoculated a short time afterwards, and with the like good success with the former."



“From this view of the matter, it is pretty evident, I think, that this operation ought, in general, to be postponed to a later period, which is pointed out by the child having cut all its first teeth.”

Dr. Macdonald justly remarks, “that the deaths of infants often happen under circumstances the more distressing.”

Before me lie the records of two unfortunate families. In the one, a father and four of his children were inoculated for the small-pox; the eruptions proved of the confluent kind: *two children* out of the four died.—The other is a young widow, who lost her husband at the early age of 24. *One infant* at the breast was left her, which, in her pitiful situation, constituted her only consolation. Soon after, the small-pox began to rage in the city where she lived; she therefore was advised by her friends to inoculate her little boy. With reluctance, as if presaging her impending misfortune, she consented.—Her fears, alas! were but too well grounded: on the day preceding the eruption, the child was seized with convulsive fits, and expired on the tenth day.

“One smiling boy, her last sweet hope she warms,  
Hush'd in her bosom, circled in her arms;  
Daughter of Woe!—ere morn in vain caress'd,  
Clung the cold babe upon thy milkless breast,—  
With feeble cries thy last sad aid requir'd,  
Stretch'd its stiff limbs, and on thy lap expir'd.”

DARWIN.

3d. *Dentition*



3d. *Dentition is found to be a period in which inoculation was hazardous.*

The small-pox is usually issued in by convulsions in children at every age. The period of dentition being very liable to such convulsive attacks, which often prove fatal, would naturally put the practitioner on his guard against bringing on, or adding to, an event equally terrific, as it is often fatal.

“It cannot be denied,” says my learned and eloquent friend Dr. Macdonald, “but the inoculation of the small-pox has proved to mankind a ready means to alleviate and escape the danger of a most distressing disorder; still, notwithstanding these happy effects, the inoculated small-pox is *often* accompanied with symptoms which give just cause of alarm, and *sometimes* prove fatal under the most judicious management.”

“Were I to record all the distressing scenes which frequently attend the inoculated small-pox, or relate the sad histories of those unfortunate families, who, in consequence of inoculation, have felt the ragings of this dire disorder; the stoutest heart would shrink with horror, and drop a tear of pity over the sufferings of humanity.”

“I would wish to relinquish this subject, for my pen can give but a faint sketch of those pictures of singular distress, which every physician of even moderate experience has witnessed.”

“Paint to yourself one of these little innocent  
D 3
sufferers,

sufferers, stretched out, and covered with one continued sore; threatened with suffocation, uttering the agonies he feels, by piercingly heart-wounding groans.—Observe how his mouth foams; listen to the grinding of his teeth; see how he thrusts his little trembling tongue betwixt them, and how piteously it is wounded!—Look! how he is agitated with the most dreadful convulsions! his feeble limbs are twisted and contorted, and threaten dislocation; his frame bends backwards, is lifted up and thrown down again!—These fits now increase,—then cease;—alas! only to return with redoubled violence.—Misery calls aloud for help, help;—but calls in vain.—New convulsions succeed;—he foams,—struggles, gasps,—gasps again,—and expires!”

“If at scenes like these your heart would bleed, what must be the feelings of a fond parent, when this destroying scourge nips in the bud the fairest blossom of his hope?”

4th. *Old age,*

Although this period cannot be alledged as equally unfavourable as either of the foregoing, it is one a practitioner would not prefer; and it seems cruel to subject a person on the verge of the grave to the chance of a disease that possibly may prove extremely severe.

5th. *Pregnancy was a situation in which inoculation generally produced abortion, and the death of the individual.*

Cases of this sort are to be found in every author. In Mead we have the following affecting narrative :

“ A lady of quality at the seventh month of her pregnancy was seized with the natural small-pox, which proved of an unfavourable sort. On the eleventh day she was brought-to-bed, and safely delivered of a male child : on the fourteenth she died. On the fourth day following, the infant was seized with convulsions, the forerunner of the eruption, which appeared on that same day, and he died in the evening.”

The inoculated disease was found also equally dangerous.

“ A physician at Winchester informs me,” says Dr. Kirkpatrick in his *Analysis of Inoculation*, “ that in the several towns of Hampshire, Suffex, and Surrey, there have been inoculated 2000, of whom *two* only died, both pregnant women, who admitted this operation contrary to the opinion of their physician.”

*6th. That it precludes the poor person inoculated following his usual avocation.*

The majority of mankind are destined to procure their daily subsistence by the sweat of their brow. The earnings of industry too frequently are found inadequate to the support of a family, so that any thing can be laid up for a rainy day ; hence the total inability of the poor to sustain the heavy calamity of a whole family suffering under the inoculated small-pox. The mother can ill af-

ford even the attentions required for a sick family, and the honest peasant is unable to lose the time requisite under this disease, even should the inoculation, and medicines required, be given gratis.

7th. *The many individuals that, from humours and other causes, are considered unfit subjects for inoculation.*

I should tire the reader were I to quote, from Sutton on Inoculation, three long pages descriptive of persons esteemed unfit to receive inoculation: even very fat children, although otherwise healthy, are included among that class.

It must be acknowledged that the *most dreadful diseases* in certain habits, often difficult to distinguish, are *called forth* by inoculation; hence the vulgar prejudice of other diseases, especially the king's-evil, being actually ingrafted with the small-pox.

The learned Dr. Mead took the pains first to counteract this vulgar error.

“Some,” says he, “would attempt to dissuade us from inoculation, by affirming that there is danger left, together with the small-pox, some other infectious disease, inherent in the blood and humours of the sick person, should be transmitted into the sound body: all contagion being very subtle, and wonderfully active. And it is indeed not improbable, that some other distempers, besides those which are cutaneous, may, by such a way as this, get admittance into the skin: and such perhaps are scrophulous swellings, and the venereal



nereal disease. Yet I can hardly believe that it ever happens, that the seed of one distemper should bring along with it, mixed, the procreative matter of another, of a nature quite different from it. However it be, it would be madness in a physician, without any choice, to take the morbid matter for this purpose out of sick bodies, without distinction. The most proper subjects are infants or children, found in all other respects, as far as can be judged, and born of healthy parents. Besides, it is in my opinion more material, into what kind of a body the venom be infused, than out of what it be taken. And this I the rather mention, because I have more than once known rash and unwary surgeons to implant the disease into bodies weak, and of an ill habit, with a fatal event."

"I cannot however," he adds, "but think, that boils, and swellings under the ears and in the arm-pits, arise *more frequently* after the distemper procured by art, than after that which comes of its own accord; for this reason, as I suppose, that the venomous matter is pushed forward with less force, which disadvantage nature makes amends for this way. Therefore, all possible means are to be used to ripen such tumours, of whatever kind they are: if this cannot be done, they must be opened by incision; and when all the matter is drawn out, the body must be purged by proper medicines, which  
are

are to be *oftener repeated* in this than in the natural disease.”

Thus arose the practice of preparing before and physicking after inoculation, of making issues in both arms, inserting a deep pledget with the small-pox matter on it, or setons, to make a great outlet for the escape of the peccant humour: but all this is now laid aside, as being unavailing; for the body being once completely poisoned, the blood corrupted, and the solids enfeebled, nothing of this kind avails; and hence many physicians have justly suspected the propriety of purges after the small-pox, and even abandoned the practice as pernicious.

8th. *But above all, and lastly, although an individual advantage may be obtained, yet, as extending the disease by infection far and wide, it became on that account a public nuisance.*

This circumstance soon struck the discerning mind of Baron Dimsdale, who had the honour of being selected from among the Faculty here, and went from England in order to inoculate the Empress of all the Russias; which succeeding, besides a pension, he was made a counsellor of state, and body physician to her Imperial Majesty.

Although every inducement led him to conceal the fact, yet, actuated by the love of truth, and patriotism towards a country to which he owed his promotion in life, he came forward to sound the alarm,

alarm, and shew how a seeming blessing was an actual evil to the state.

“ Although the loss,” says he, “ under inoculation is very inconsiderable, *almost the whole* of those that are inoculated recovering, yet by spreading the disease, a greater proportion take it in the *natural* way: *more lives* are now forfeited in London than *before inoculation commenced*, and the community at large sustains a *greater loss*: the practice therefore is more *detrimental* than *beneficial* to society. In the last four years preceding 1776, the London bills from the small-pox arose at a medium to two thousand five hundred and forty-four: this increase is truly alarming. The disease by inoculation at the different public charities throughout London, would spread by visitors, strangers, washerwomen, doctors, and inoculators; by means of hackney coaches, in which the sick are to be sent out to take the air, or by sound persons approaching them in the streets.”

“ The poor in London are miserably lodged; their habitations are in close alleys, courts, lanes, and old dirty houses: they are often in want of necessaries, even of bedding. The fathers and mothers are employed out constantly in laborious occupations and cannot attend the inoculated sick; should they neglect their occupations, food and necessaries would be deficient, and the medicines ordered by the physicians would not be regularly complied with. The air in their houses is impure: they have neither areas, gardens, nor *carriages* for  
the



the convenience of ventilation, and taking fresh air."

"Sailors and sea-faring people, many of whose lodgings are miserable in the little houses bordering on the river, would be liable to catch the distemper, and either to fall sick there without friends or assistants, or perhaps being infected on shore, to carry it to sea in their contaminated cloaths, and afterwards falling sick without care or attendance, might spread the disease in foreign climates."

"Country people coming to town for markets, visits, or pleasure, would all be subject to the danger of infection. Persons coming from the sick to public charities, for medicines or advice, by intermixing in the streets, the *public* danger from their infected apparel would be *great* and inevitable: the whole neighbourhood would be exposed, and in imminent danger, by having the small-pox brought to their doors. The gossiping disposition of the poor will spread it further; and after the sick recover, falling forth in their infected cloaths is certain to add to the mischief. The children who are able to run about will intermingle in the streets, immediately upon their recovery, with their playfellows; the success therefore derived from inoculation must be beneficial to a *few* only, but involve a great number of others in danger, to which they would otherwise be less exposed."

Dr. Heberden observes, "that the poor form the largest part of mankind, and only consider the  
present



present moment; and their prejudices are strong, and not to be overcome by reason. Hence, while the inoculation of the wealthy keeps up a perpetual source of infection, those who either do not choose, or cannot afford expence, are more exposed to this distemper. The danger also is increased by the custom of sending persons into the open air in every stage of the disease. Hence, while *inoculation* may be justly esteemed as one of the greatest improvements ever introduced into the medical art, it occasions a greater sacrifice of life by what has been distinguished by the appellation of the *natural* small-pox."

As a proof of this position, we have the following record from a most diligent and careful observer of facts, Dr. Willan, in his account of the diseases in London.

"A child having been inoculated in a court (whose parent kept a chandlers-shop) consisting of twenty houses; the consequence was, that in this court seventeen persons took the natural small-pox, although the season was kind (April); and *eight* of these died.

They in their turn became the focus of fresh infection, and thus a private good was converted into a public evil."

The author of this treatise has had abundant opportunity to see the same repeatedly verified in his practice as physician to the Mary-le-bone Dispensary.

## CONCLUSION.

Hence it would appear, that inoculation has done a great injury to society at large, and the difficulty of extending it *generally*, so as to convert it truly into a public benefit, is attended with almost insuperable objections: For to make it into a law, that inoculation shall be general and periodic, appears both cruel and arbitrary, where security of life cannot be given to all, and is what no government, grounded on the basis of general liberty, would venture to adopt.

Hence the laws in our West India plantations, not to encourage, but *against*, capricious inoculation; hence the entire prohibition in America of this practice; and, as we shall presently prove, the necessity of the same steps from our Legislature, when once the advantages of *vaccine inoculation* (the Cow-pock) shall be clearly ascertained, which we hope to be able to accomplish in the ensuing pages.

## SECT. VI.

ON THE NATURAL COW-POX AND ITS  
FREEDOM FROM DANGER.

Pock, in old English, means a pustule, and where more than one appears, the plural is used; and hence the vulgar appellation of *Cow-pox*, to designate a pustular disease originating in the cow.

The first notice we have of such a distemper among these domesticated animals is from Dr. JENNER, a physician of great estimation in Gloucestershire, whose penetrating genius did not fail to notice and examine into its *supposed extraordinary power* OF PREVENTING THE SMALL-POX.

From this distinguished physician, we were first informed of the symptoms of this disease.

“It appears on the teats of the cow, in the form of irregular pustules. At their first appearance they are commonly of a palish blue, or rather of a colour somewhat approaching to livid, and are surrounded by inflammation. The animals become indisposed, are off their food, and the milk is considerably diminished. *The death of the animal never follows the disease.* The cow-

E

pox

pox is soon communicated to those employed in the dairy, and spreads through the farm until most of the cattle and domestics feel its unpleasant consequences."

The symptoms of having taken this disease in the *human subject*, are

1. "Inflamed spots, appearing on different parts of the hands of those engaged in milking and sometimes on the wrists, which run on to suppuration, first assuming the appearance of small vesications produced by a burn."
2. "Most commonly they appear about the joints of the fingers, and at their extremities; but whatever parts are affected, if the situation will admit, these superficial suppurations put on a circular form, with their edges more elevated than their centre, and of a colour distantly approaching to blue."
3. "Absorption next takes place, and tumours appear under each axilla."

The system then becomes affected.

4. "The pulse is quickened."
5. "Shiverings are succeeded by heat."
6. "General lassitude, and"
7. "Pain about the loins and limbs, with"
8. "Vomiting, and"
9. "The head is painful, and the patient is now and then affected with delirium."

These



These symptoms varying in their degrees of violence, generally continue from one day to three or four, leaving”

10. “Ulcerated sores about the hands, which heal slowly, and frequently become phagedænic.”

“No eruption arises from the absorption of the virus.”

The *cow-pox* being a disease chiefly falling among a poor class of people, and confined to certain districts, and *never proving fatal*, it was long unnoticed, and probably had continued in obscurity to this day, unless it had possessed the wonderful power of SECURING FROM THE SMALL-POX; *for a person (as will be soon proved) having once had the cow-pox, cannot be afterwards infected either by exposure to the small-pox, or by the actual insertion of the matter under the skin, as Dr. JENNER first, and others have since demonstrated.*

The cow-pox is *now* known to exist in Gloucestershire, which gave origin to its clear investigation; in the counties of Dorset, Somerset, Devon, Hants, Middlesex, Norfolk, Bucks, Oxford, Leicester, Stafford. It has been also traced in Ireland, Italy, and other parts of the continent.

## SECT. VII.

PROOFS THAT THOSE WHO HAVE HAD THE NATURAL COW-POX ARE EVER AFTER SECURE FROM TAKING THE SMALL-POX, EITHER NATURALLY OR BY INOCULATION.

THE first cases ever laid before the public on this interesting subject are those by Dr. JENNER.

## Proof I.\*

JOSEPH MERRET, now under-gardener to the Earl of Berkeley, living with a farmer at Berkeley, had the *cow-pox* in 1770.

In 1795, a general inoculation took place, and Merret with his family, not knowing the preventive power of the *cow-pox*, was inoculated with the rest.

The inoculator finding that Merret's arm did not rise, inserted the matter repeatedly *but without effect*.

\* Proofs I. to V. are extracted from a work, dedicated by permission to his Majesty, entitled, "*An Inquiry into the Causes and Effects of the Cow-pox*," by EDWARD JENNER, M. D." which was the first publication on this subject; a work which will live in the grateful remembrance of posterity, until time shall be no more!!!

*Neither*

*Neither did he take the small-pox, although he continued with his family, all of whom had the small-pox, and some of them very fully.*

Here is a proof at least of 25 years preservative power from the small-pox from the *cow-pox*.

### Proof II.

SARAH PORTLOCK, of Berkeley, had the *cow-pox*, when servant to a farmer in the neighbourhood, 27 years ago.

Last year her child caught the *natural small-pox*, whom she nursed throughout the disease.

Fearful of taking the small-pox she was also inoculated.

*But she was insusceptible of the small-pox in either way.*

### Proof III.

JOHN PHILIPS, a tradesman of Berkeley, had the *cow-pox* when nine years old.

At 62, Dr. Jenner inoculated him; *but it produced no effect on the system.*

Here is a proof of the preservative power of the *cow-pox* for more than FIFTY years.

### Proof IV.

The poor of the village of Tortworth, in Gloucestershire, were inoculated by Mr. HENRY JENNER in the year 1795.

Upon inquiring among these, *eight* persons acknowledged they had had the cow-pox.

Upon trial all were found to have taken the small-pox who were inoculated, except these *eight*; *neither did they take the small-pox from associating with those labouring under this disease.*

Equally convincing are all the other facts adduced to prove the efficacy of the *cow-pox*, in preserving us from the *small-pox*; brought forward by Dr. JENNER, in "An Inquiry into the Causes and Effects of the Cow-pox;" to which we refer the reader desirous of further information, and we proceed with the most respectable CORROBORATING TESTIMONIES in support of this *wonderful property* in the *cow-pox*.

### Proof V.

JEFFREY TREDWELL, a reputable farmer, and a tenant of mine \*, about fourteen years ago had the mortification, as he thought, to find the cow-

\* Proofs V. to VII. are extracted from a pamphlet entitled "*Reflections on the Cow-pox, illustrated by Cases to prove it an absolute Security against the Small-pox*, by WILLIAM FERMOR, Esq." The able production of a gentleman of large landed property, residing at his seat at Tusmore in Northamptonshire; a gentleman endowed with the greatest urbanity of manners, and possessing a mind stored with classic lore, and replete with the warmest glowings of philanthropy:



pox in the farm he then occupied, at Chesterton, in this neighbourhood.

His brother WILLIAM TREDWELL, being employed in milking the cows, was infected with the *cow-pox*, and had the disease severely in his hands and fingers.

Jeoffry not being so engaged, did not receive the infection.

About three years after, these two brothers were inoculated with variolous matter, by Mr. Lister, of Charlbury, an eminent practitioner, at a house appropriated for that purpose. WILLIAM TREDWELL, who had undergone the *cow-pox*, *could not receive the infection*, though he was inoculated several times, and remained in the house with the other patients.

Jeoffry, who had not been infected with it, *had a very full small-pox eruption*.

#### Proof VI.

ALBAN COLLINGRIDGE had the *cow-pox* about five or six and twenty years ago, at his father's farm, at Poodle, which affected his fingers in a violent degree.

About four years after, he was three times inoculated for the small-pox by Mr. Lister, *without effect*.

Two of his brothers, who had never had the *cow-pox*, *received the variolous infection*.

He slept with them in order to take it, *but no consequence ensued.*

He has frequently since been exposed to its contagion, and has very lately inoculated his children with the SMALL-POX, *without being in any shape infected with it himself.*

#### Proof VII.

Mr. HENRY COLLINGRIDGE, of Godington, a reputable farmer, and a tenant of mine, received the *cow-pox* infection by milking, when he was fourteen or fifteen years of age.

Ten years after he was three times inoculated for the small-pox, *without effect.*

After an interval of ten years more, he had another child inoculated; *but, though fully and frequently exposed to the contagion, he was not in any degree affected by it.*

#### Proof VIII.\*

On conversing with Sir GEORGE BAKER, Bart. President of the Royal College of Physicians, and

The following proofs VIII. to XIII. are extracted from a work entitled, "*An Inquiry concerning the History of the Cow-pox, principally with a view to supersede and extinguish the Small-pox; by Dr. PEARSON, physician to St. George's Hospital;*" one of the brightest luminaries of medical and chemical erudition; who has ever shewn himself the active inquirer after *new truths*, by whose accurate tests we stand or fall; and who, not in one, but in very numerous instances, has himself extended the vast empire of discovery.

physician

physician to his Majesty, concerning the extraordinary circumstance of the cow-pox rendering people unsusceptible of the small-pox, Sir George observed, "he had been long since informed of the fact in some papers communicated to him many years back by his relation the Rev. HERMAN DREWE, of Abbots; but not finding any credit given to the statement, which seemed so much to border on the *marvellous*, they were withdrawn from publication \*." I accordingly wrote, says Dr. Pearson, a letter to this

\* Thus was withheld, for a time, from mankind, the benefit of the knowledge of this marvellous fact; and the Rev. Mr. DREWE, removing to another part of the country, relinquished all further investigation of a subject which had once arrested and occupied his attention; and thus *he* lost for ever the acquisition of the proudest laurel that could have decorated the brow of man!!

When this *truth* was first announced to the public by Dr. JENNER, my emphatic friend Dr. MOSELEY, the able writer on "*Tropical Diseases*," in his "*Miscellaneous Medical Observations*," after giving a long string of strange wonders recorded by men of gravity, relates the following anecdote: "The virtues of the COW-POX are said to be an AMULET AGAINST THE SMALL-POX; and this *charming*, this *excellent*, this *delectable* malady, is reported as equally *mild* and *innocent*, and *communicable* with *safety* by *inoculation*."

"*Wonderful things* do certainly appear in *all ages*. The great ERASMUS relates, that there was one PHALARIO, an Italian, who in Holland was very much afflicted with *worms*, and, while the worms were in his body, he spoke the *Dutch Language*.—The worms being *cured*, away went his knowledge, and he could not then speak one word of *Dutch*!"

clergyman,

clergyman, who then resided in Dorsetshire, from whom I obtained the following information.

“ That the cow-pox was a disease known in Devonshire, Dorsetshire, and Somersetshire; and an opinion prevailed, that this afforded a security against the small-pox. Accordingly, when Mr. BRAGG, surgeon of Axminster, inoculated my parish, he rejoiced with me in having an opportunity of clearly ascertaining this fact.

“ He found, out of 53 patients, *three* women who declared they had had the cow pox, but not the small-pox; and these were charged with superabundance of small-pox matter.

“ *All the others took the infection but the three women, who were not in the least disordered; nor did they catch the small-pox by associating with those who laboured under it.*

“ In my neighbourhood there were *thirteen* similar examples of the same kind.”

#### Proof IX.

The Rev. Mr. HERMAN DREWE mentioned that he also obtained a further confirmation of the truth of this opinion from the experience of Mr. DOWNE, surgeon of Bridport.

“ This surgeon having inoculated from between six or seven hundred persons at one season, found only *two* who could not be infected; and upon inquiry he learnt that they had had the *cow-pox*.”

His



His other source of information was from Mr. Barnes, of Colyton, since dead.

### Proof X.

“Happening, with Mr. Lucas, apothecary, to be called on professional business to Willan’s farm, adjoining the New Road, Mary-le-bone, which contains from 800 to 1000 milch cows; I availed myself (says Dr. PEARSON) of this opportunity to make some inquiries about the cow-pox.

“I was informed that this disease was not unfrequent; and in January last more than 200 out of this number of cows had been affected with this disorder.

“Three of the milkers whom I met with there, professed having had the cow-pox, but never the small-pox, and they consented to my inoculating them. Two other men, who had never had either the cow-pox, or small-pox, agreed also to be inoculated with variolous (small-pox) matter.”

The cases of the three first are as follows.

### *Case 1.*

THOMAS EDINBURGH, aged 26, had lived servant at Willan’s farm the last seven years.

The first year of his coming there he took the *cow-pox* with others.

He had eruptions on the palms of his hands, which left a cicatrix, and were so painful that he was obliged to desist from his employ.

A fever

A fever coming on, and tumours arising under the axillæ, which were very sore to the touch, he went into a public hospital, where he was dismissed cured.

*Case 2.*

THOMAS GRIMSHAW, aged 30, had the cow-pox at the same time as Thomas Edinburgh, but with somewhat milder symptoms.

*Case 3.*

JOHN CLARKE, aged 26, had the cow-pox at Abingdon, ten years back, and was under a surgeon of that place.

These three were inoculated with the small-pox matter by the surgeon at the small-pox hospital, from a patient in a proper state to take the matter.

It may be proper for readers not conversant with the small-pox inoculation, to relate the usual progress of infection:

A small particle of variolous (small-pox) matter being applied by a superficial puncture of the skin, usually produces, in the course of three or four days, or sooner, a little *elevation* of the punctured part, discoverable by the touch, and a *red speck* distinguishable by the eye.

From this time the *redness* advances in a *circular form*, more or less rapidly, according to the constitutional circumstances of the patient; and the first effect of this superficial inflammation is the  
 6 formation

formation of a *vesicle* upon its centre, which usually appears between the fourth and seventh day after the inoculation.

The extent of this vesicle is generally found to bear some proportion to the intensity of the inflammation; and contains a *limpid fluid*, by the absorption of which the small-pox is produced.

The vesicle soon bursts, and the central part of the puncture becomes depressed, and often of a *dark blue*; which appearances, together with the *marginal inflammation*, continue to increase till the eruptive symptoms subside, when the edges of the depressed part begin to swell with a *purulent fluid*, and the inflammation gradually recedes.

The subsequent fever usually proves on or about the eighth day.

The two men, who had neither the cow-pox or small-pox, exhibited, upon inoculation, the appearances above stated, and Kent had 30 pustules, the other 12.

In the others, for instance, in the case of Thomas EDINBURGH,

A *slight elevation* appeared in the parts inoculated.

The *red speck* and *marginal inflammation* seemed too rapid for the small-pox infection.

In less than four days the *part inoculated* on the right arm looked more like a *gnat-bite*.

On the left there was a *little scab*, which was rubbed off, and left only a scarcely visible red mark.

There

There was no *constitutional affection*, or any complaint whatever.

The same thing nearly occurred with Thomas GRIMSHAW.

It was somewhat different with JOHN CLARKE.

He was inoculated in both arms at the small-pox hospital.

On the *third day* there was an inflammation, and a fluid in the parts inoculated: but these appearances were judged to be *premature* as far as respects the small-pox.

On the *sixth day* these appearances wholly deserted the left arm.

On the *eighth day* there was inflammation on the right arm.

No signs of sickening, or any eruption, or indisposition.

He was inoculated again, but *without effect*.

It should also be remarked, that the three patients abovementioned, who did not take the infection on *inoculation*, had their children afterwards inoculated, who all had the small-pox. These men lived in the same apartment with their children during the illness of the small-pox, *but not one of them was infected*.

#### Proof XI.

Mr. ROLF, who was colleague of Mr. GROVE of Thornbury, a famous inoculator for upwards of  
I
forty



forty years, in a letter published by Dr. Beddoes \*, dated June 10th 1795, communicated the following observations :

Speaking of a man who could not be infected, although he was repeatedly inoculated for the small-pox, and although he lived in the same room with another man who died of the small-pox, Mr. ROLF says, " it is worthy of remark, that this man had, some years before, a complaint incident to cows, commonly called the *cow-pox*; a malady more *unpleasant* than *dangerous*, for there is no instance of any one dying of the cow-pox. It is received by contact in milking, usually from chops in the hands.

" In the human being, the complaint is sometimes *local*, at other times *absorption* takes place, and the glands in the course of the absorbents become indurated and painful. In either case, *I have learned*, from my own multiplied observations and the testimony of the oldest practitioners of inoculation, THAT SUSCEPTIBILITY TO THE SMALL-POX IS DESTROYED. Some advantage may probably, *in time*, be derived from *this fact*."

\* Vide "*Queries*" of this great physician "*on Inoculation*," subjoined to a translation of Gimbernat's New Method, &c. The obligations mankind owe to Dr. BEDDOES are incalculable; his high merits are superior to my feeble praise. At some future period his extensive views will be fully understood; and *then* he will be rightly, and not till *then* rightly appreciated.

Proof

## Proof XII.

Abstract of a letter from Mr. FEWSTER, surgeon in Thornbury, dated October 11th, 1798, to Mr. ROLPH. "In the spring of the year 1768 I came to live at Thornbury, where I have resided ever since. In that very year, from the following occurrence, I became well acquainted with the disease called the *cow-pox*. The late Mr. GROVE and MYSELF formed a connection with Mr. SUTTON \*, the celebrated inoculator; and, to inoculate

\* Mr. ROBERT SUTTON, the first of this name who acquired celebrity as an inoculator, resided at Debenham, in Suffolk, where he practised surgery and pharmacy. He began to inoculate in February, 1757, from which year to 1767 the number of persons inoculated by him was 2,514.

Two of his sons, ROBERT and DANIEL, designing to follow the profession of their father, were employed in the dispensing of medicines, and in assisting him during the three first years of his practice of inoculation: after which, Robert, the elder brother, removed to Bury St. Edmund's, where he became an established inoculator; while Daniel acted as assistant to Mr. Burnstead, a surgeon and apothecary at Oxford.—The latter, on his return to Debenham in the year 1763, suggested to his father (as I was informed by him) a NEW PLAN of inoculation, in which he proposed to *shorten the time of preparation to a few days, and not to confine the inoculated patients to the house, but to oblige them to be in the open air as much as possible during the whole progress of the distemper.*

To reduce the process preparatory to inoculation, from a month, which was then the usual time, to eight or ten days,

late for the small-pox, we took conjointly a house at Buckover: *We found in this practice, that a great number of patients could not be infected with the small-pox, notwithstanding they were inoculated and exposed*

days, was to obviate the objections that many persons had made to inoculation, from the great length of time it required. This, therefore, might be thought a measure of expediency, to bring a greater number of patients; but obliging those under inoculation to walk out in the *cold air*, during the eruptive fever, seems to have been a practice derived from Sydenham, and confirmed by experience. However, Mr. Sutton, the *father*, could not be persuaded to adopt any *innovation* in his practice of inoculation, and would not hear of his son's *new* scheme, which he *condemned* as not only *rash* and *absurd*, but as *extremely dangerous*. Daniel soon afterwards, however, availed himself of repeated opportunities of carrying it into effect, and found it to answer his utmost expectations. The advantages of this *new plan* were soon perceived by the *patients*, who now began to manifest a desire of being solely under the direction of Mr. D. Sutton. This preference gave occasion to a dispute between the father and the son, about the end of the year 1763, when the latter determined to practise inoculation uncontrolled by parental authority; and for this purpose he opened a house in the neighbourhood of Ingatestone, in Essex. Here the young adventurous inoculator, by public advertisements and hand-bills, proposed to inoculate upon an *improved method*, peculiar to himself; and also hinted, that, by the *use of certain medicines*, he could always render the *small-pox* an *innocent* and *tractable disease*. Three months elapsed before he profited by his new situation: but he afterwards succeeded so well, that at the close of the first year his profession produced him 2000 *guineas*: and in the second year, which he says was the most profitable of any that he

F

experienced,



*exposed to the strongest contagion of the small-pox.* This excited in *us* much surprize, and *we* were not able to account for the circumstance, until a farmer mentioned, that he had had the *cow-pox* lately, and wished to know, whether our failure of repeated inoculation in him did not originate from this cause. His expression was, as well as I recollect, “*I have had the cow-pox lately to a violent degree, if that’s any odds \*.*” We took the hint, and, on inquiry, found, that all those who were not to be

experienced, his fees amounted to more than *treble this sum*. His *fame* was now spread to the most distant parts of the kingdom; and the numbers that resorted to him for inoculation constantly filled the village of Ingatestone, so that it was with great difficulty lodgings could be procured for the purpose. His practice in Kent being also very extensive, he was under the necessity of employing several medical assistants. He also established other connections over the kingdom; and he is reported, by the Rev. Mr. Houlton, chaplain to the Earl of Ilchester, (vide a sermon on Inoculation, preached at Ingatestone, Oct. 12, 1766,) along with his assistants, to have inoculated within three years upwards of 20,000 persons.

\* This circumstance should have led to VACCINE INOCULATION; but the time was not yet come, the honour being reserved by Providence for another. Had D. SUTTON, or his colleagues, instituted VACCINE INOCULATION in lieu of the small-pox inoculation, they would have *still more* earned the plaudits of mankind. To them most assuredly we owe the extirpation of the *sweating practice* in the small-pox, and the preferable adoption of the *cool regimen*, as recommended by the great Sydenham.

infected,



infected, had *all* undergone the *cow-pox*. I communicated this extraordinary fact to a medical society of which I was a member, and ever after paid a very particular attention to the circumstance; and am now so convinced of this truth, that I can affirm, that I have not been able to produce the *SMALL-POX*, in a single instance, among persons who have had the *COW-POX*."

He adds, "This fact was lately clearly ascertained by me, when I inoculated upwards of two thousand persons for the small-pox."

### Proof XIII.

About twenty years ago\*, when Dr. ARCHER was the physician of the hospital for inoculation, CATHARINE WILKINS, now Titchenor, from Cricklade in Wiltshire, who had the cow-pox in consequence of milking cows, came to her brother in London, (where she is now resident,) who, being de-

\* This curious fact is extracted from a pamphlet intitled "*Observations on the Cow-pox* by JOHN COAKLEY LETTSON, M. D." a physician of great repute, whose quaker appearance would bespeak him a man of sentences, but in whose writings are to be found all the graces of diction, and fascination of eloquence. (Vide motto to this book.) His strong appeal to parents, guardians, and the clergy, on the subject of *vaccine inoculation*, can scarcely fail of producing its desired effect; and the *shades* of Jenner, Pearson, and Woodville, with which he has embellished his work, must be an acceptable acquisition to his less opulent brethren, admirers of the benefactors of mankind.

firous of ascertaining whether this circumstance could be depended upon as a preventive of the small-pox, sent her to the hospital for inoculation, when she received the variolous matter from Dr. Archer; against which, however, she was proof, and the small-pox of course could not be communicated; but *no advantage was derived from this fact* \*.

\* ARCHER was a prudent, cautious, and rather timid practitioner, and he advanced much by his attentions to the hospital for inoculation at Pancras; but he neither possessed the spirit of inquiry of a Woodville, nor the genius of discovery of that Man who was destined to form a new æra in medical practice; so that the boon offered him by Providence dropt from between his hands!

It is somewhat mortifying to human nature to think, that, from such *palpable hints*, men, bred to the profession of physic, and more particularly conversant with the small-pox, should not have drawn out an *useful inference*.

## SECT. VIII.

THE ANTIQUITY OF THE COW-POX, AND THE KNOWLEDGE, THAT IT WAS A SECURITY AGAINST THE SMALL-POX; AND OF SOME RUDE ATTEMPTS FORMERLY MADE OF ACQUIRING THIS DISEASE.

PURSUING the same conduct in this disquisition, as in that of the *small-pox*, we shall find that the knowledge of the security which the cow-pox gave over the small-pox had long prevailed in many parts of England; and the untutored sense of mankind even led to the adopting the practice of *taking this disease*, as a security against the small-pox.

PROOF I. The Rev. JOHN SMITH of Wendover, to whom (says Dr. Pearson) I owe many thanks for very willingly, at my request, taking upon himself the trouble of making inquiries in his neighbourhood, informs me, “that the high land of his parish does not admit of dairying upon it, and the dairy farmers here know nothing of the cow-pox. But Mr. HENDERSON, the surgeon in the parish, whose practice takes him a little into the vale, tells me, that he has met with the disease; and that, a few years ago, he three times endeavoured to inoculate a lad,

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who

who had been used to milking, but could only excite inflammation upon the arm, without any pustulous appearance; and, upon inquiry, he found the lad had previously been affected with the cow-pox. Mr. WOODMAN, a surgeon at Aylesbury, had met with the disease among the cow-boys in the vale. Mr. GREY, a surgeon of Buckingham, says, the disorder is common among the milkers in his neighbourhood. He had not been led to consider, particularly, the effects of the disease; but he remembers *one boy possessed of the idea that he could not take the SMALL-POX by inoculation, because he had had the COW-POX; and that he could only excite redness upon the boy's arm.*"

2. On calling at Mr. RHODES' milk farm on the Hampstead Road, where there is a very large stock of cows, I found the cow-pox, says Dr. Pearson, had not fallen under his observation; but two of the male servants were well acquainted with some parts of its history. It appeared, also, on inquiry, "that one of the cows had really laboured under the disease two months before, namely, in May last; but the milker was not infected, because he said there were no cuts on his hands, or abrasion of the cuticle. It was described very clearly to be a different disease from the common inflammations and eruptions which produce scabbed nipples. One of the male servants had often seen the disease in Wiltshire and Gloucestershire. The milkers, he said, were sometimes so ill, as to lie in bed for several days, and there



there was a fever at the beginning, as in the small-pox, but that *no one ever died of it*. He had known *many persons* who had laboured under the cow-pox, but who had never suffered the small-pox, *although it prevailed in their own families*; except in *one instance* in which he was told that the person who took the small-pox, had gone through the cow-pox when a child. The same servant said it was a *common opinion*, that people who have been affected with the cow-pox, to use his own words, are “*hard to take the small-pox.*”

3. A male servant of Mr. FRANCIS, who keeps a farm for milch cows on the road to Somers' Town, who appears to be a very intelligent man, and is said to be a man of veracity, and had lived in dairy farms all his life, stated, “that he had seen the cow-pox 35 years ago at King's Wood in Somersetshire, and frequently there, and in London, since that time. The disease, he said, was then vulgarly called the cow-pox; it appeared on their teats and udders with fiery or flame-like eruptions—was very infectious among the cows and the milkers; but never knew *either human creature or beast die of it*. It affects the hands and arms of the milkers with painful sores, as large as a sixpence, which last for a month or more, so as to disable the sufferers from continuing their employment. The disease breaks out especially in the spring, but occasionally at other times of the year. Most of the cows in his master's (Mr. Francis's) farm were

infected three years ago in the spring, at which time many of the milkers were also infected. A new cow is very liable to take the disease.—He had *always understood that a person who had had the COW-POX, could not take the SMALL-POX, and never knew in the course of his life an instance of the small-pox in such persons.*”

4. Dr. WALL, professor of physic at Oxford, writes: “A servant who has kept the cows of a considerable dairy-farm in this neighbourhood a great many years, told me, that he had had the cow-pox early in life. Yet about six or seven years ago he wished, for security, to be inoculated for the small-pox.—The operation was performed three several times, but no disorder nor eruption ensued. The *surgeon*, a gentleman of great eminence in this place, asked him if *he had ever had the cow-pox*; upon his answering *yes*, the *surgeon* replied, ‘*Then it is useless to make any farther trial.*’ This servant, the next year, had several children inoculated by Sutton. He was with them all the time till their recovery, but did not receive the infection.”

5. Dr. CROFT tells me, that, in Staffordshire, to his knowledge, *the fact has been long known, “of the cow-pox, which prevails in that county, affording an exemption to the human subject from the small-pox.”*

6. “My honourable friend, Mr. EDWARD HOWARD,” says Dr. Pearson, “has been assured, on very good authority, that of a relation, who is an officer in the Oxfordshire militia, that it is a *received*  
6 opinion

*opinion among the soldiers, that it is unnecessary to be inoculated for the small-pox if they have already laboured under the cow-pox, as many of them have done."*

7. *Extract of a letter from Dr. FOWLER to Dr. PEARSON, dated Sarum, October 24, 1798.*

" My dear Sir,

" The disease called cow-pox is known in this neighbourhood only to a few farmers, *but they understand that it is a preservative from the small-pox.* This morning, *Ann Francis*, a servant girl, aged 26 years, was brought to me. She informs me, that some years ago bluish pustules arose on her hands, from milking cows diseased by the cow-pox. These pustules soon became scabs, which, falling off, discovered ulcerating and were very painful, which were treated by a cow-doctor, and were long in healing. Some milk from one of the diseased cows having spurted on the cheek of her sister, and on the breast of her mistress, produced, on these parts of both persons, pustules and sores, similar to her own on her hands. None of these three had suffered the small-pox, nor have they gone through it since that time, although they have been much exposed to the infection; and the sister abovementioned has been inoculated three times for the small-pox. The cow-doctor who attended these three women said, *" he would forfeit his life if any of them should afterwards have the small-pox."*

" With



“With sincerest good wishes for the success of your inquiries, and all your other undertakings,

“ I am, &c. &c.

“ R. FOWLER.”

8. Dr. PULTENEY, physician at Blandford, informs me, “that a very respectable practitioner acquainted him that of *seven* children whom he had inoculated for the small-pox, *five* had been previously *infected with the cow-pox purposely*, by being made to handle the teats and udders of infected cows; in consequence of which, they suffered the distemper. These *five*, after inoculation for the small-pox, did not sicken; the other *two* took the small-pox.”

9. Dr. BARRY, a very distinguished physician in the North of Ireland, relates, among other cases, the following:

“ We have a woman here, *who*, 37 years ago, was brought with a *number of other children* to a dairy, for the express purpose of being infected with a disorder incident to cows, called by the Irish SHINACH; which, according to the *general belief*, would for ever secure those so affected from the small-pox.”

“ She was afterwards twice inoculated for the small-pox, but without effect; and the inoculator declined repeating the operation, alledging, *that there*

*was*



*was not the smallest chance of her catching the small-pox, as he could aver from frequent experience."*

"She has since that period been often exposed to the small-pox, and even slept with her own children in the height of the eruption, but could not take the disease."

We are next favoured by Dr. BARRY with the extract from a letter received, which more fully confirms this former sentiment.

"It is full thirty years since my *mother* had the cow-pox. She recollects having had two pustules on the hand, which were much inflamed, looked livid, and afterwards went on to suppuration. She was inoculated since, and exposed to the infection of the small-pox repeatedly, but without taking this disease, which has been *attributed to her having had the cow-pox*, known universally among our farmers by the name of SHINACH."

"I was last night speaking to my *grandmother* on this subject. She had the cow-pox fifty years ago. At the time she had the disease, she was told there was *scarcely a spring* but this disorder appeared in some of the farms among the cows; and *it was universally believed, that those who took it were ever after exempted from the small-pox, and that people exposed themselves to it as much as possible.*"

"My grandmother, who is more than eighty years old, declares, that the opinion of the SHINACH affording security from the small-pox *always prevailed*

*in that part of the country, as long as she can remember any thing \*."*

In Gloucestershire, where Dr. Jenner resided, the opinion "that the Cow-POX *prevented the SMALL-POX*" was indeed admitted by some; but the subject was extremely *doubtful* from the *difficulties* hereafter to be explained, which were soon cleared away by the bright emanations of a JENNER!

\* These curious facts, which came out *after* the establishment of *vaccine inoculation* by the illustrious Dr. JENNER, are derived chiefly from the laudable activity of Dr. PEARSON in his "*Inquiry*;" or are to be met with in the "*Physical Journal*," a medical magazine, which has gained the approbation of its numerous readers by the very candid manner it has conducted the extended information received respecting the *Cow-pox*, and the judicious remarks occasionally introduced on this important discovery by its learned editors Drs. BRADLEY and BARRY.

## SECT. IX.

THE DISCOVERIES OF DR. JENNER RESPECTING  
THE COW-POX.

AFTER the perusal of some parts of the two last sections, it might appear surprising to many, that the *cow-pox* was not *long ago* made a subject of general attention, and, by an apparently easy transition, introduced as a substitute for variolous inoculation.—But when we consider how few there are who dare quit the trammels of education, and depart from the beaten track; how few that have activity of mind sufficient, and resolution, to investigate a subject involved in much obscurity; and, indeed, how seldom fortunate the searchers into difficult subjects are, so as to unravel the whole perplexity, and force conviction upon a world, fearful of becoming the dupes of visionary schemes, and adverse to the receiving of novelties; no one will, after such a consideration, refuse his assent to the merit ascribed to Dr. JENNER.

Instead of being dazzled at the newness of this subject, and overwhelmed with the grandeur of one conception; instead of being satisfied with the single and important discovery, that the *vaccine inoculation* could be made a substitute for the *variolous* (the cow-pox for the SMALL-POX); “a discovery

covery so salutary to the human race," and seemingly sufficient to satiate the fullest ambition; this great physician patiently laboured throughout the whole subject, and traced *also* the origin of the cow-pox, its several stages, its discrimination from other pustular diseases with which it might be confounded, and conducted this arduous investigation with a penetration and modesty the most admirable!

The cold statue-like insensibility of some; the affected indifference of others; the sneer uttered by this man; the irritable self-love of the other; the attachment of mankind for the practice of their fathers; the hatred of novelty; all the low and vulgar prejudices\*; with falsehoods abundantly forged,

\* Among these can we refrain from reckoning the Queries made by Dr. MOSELEY in his "*Medical Observations.*"

"The small-pox (says this writer) is undoubtedly an *evil*; but we understand the *extent* of that ill, which we *had better bear*

"Than fly to others we *know not of.*"

"The subject respecting the distempers arising from the brute creation, of which we know *but little* at present, has not been overlooked by the learned and curious, nor is history destitute of *many instances* of their *fatal effects* to the human race."

"Who knows what ideas may not arise in the course of time from a *brutal fever* having excited its incongruous impressions on the brain?"

"Who knows, also, but that the *human character* may undergo



forged \*, and mistaken facts, assailed Dr. JENNER,  
as

dergo *strange mutation* from quadrupedain sympathy, and that some modern PASIPHAE may rival the fables of old?"

"I write this," adds Dr. Mosely, "to stop the hurry of public credulity, and guard parents against suffering their children becoming *victims* to experiment."

"I am truly sorry," says Dr. LETTSOM, "to find my friend Dr. MOSELEY, whose learning and extensive practice must have great influence on the public opinion, should have conceived very *false notions* of VACCINE INOCULATION, and oppose it on account of its *origin*, and even venture so far as to brand the *promoters* of the discovery of Dr. JENNER, as persons *infected* with *Cow-mania*." Vide note at page 110.

\* "It has been asserted, that persons have had the small-pox after having been affected with the cow-pox; and some facts have been published with a view to show that instances of this kind have actually happened. But all these, as far as I have seen, have been very defective in not affording sufficient proof, that the affection, supposed to have been the cow-pox, was in *reality* that disease." WOODVILLE.

For a full detection of numerous forgeries and errors, vide an elaborate Treatise on the Cow-Pox, in two volumes octavo, 500 pages in each volume, containing "*the History of VACCINE INOCULATION, and an Account of the various publications which have appeared on the subject, in Great Britain, and other parts of the world.*" By JOHN RING, Member of the Royal College of Surgeons in London."

"The practice of inoculating with vaccine matter is introduced," says this laborious and energetic author, "under the most happy auspices. It was first ushered into the world by a physician, endowed *with every accomplishment that can adorn his profession*; it has since been adopted by others, *who have distinguished themselves in similar pursuits.*"

"There

as they did our immortal HARVEY, at the onset; but he stood like a rock immoveable :

Ille—velut rupes, vastum quæ prodit in æquor,  
Obvia ventorum furiis, expostaque ponto,  
Vim cunctam atque minas perfert cœlique marisque,  
Ipse immota manens.

VIRGIL.

and

“ There are, however, some persons, equally hostile to all excellence, and to all improvement, who declare open war against this *new light*; like the bat, which cannot endure the face of day. One of them intimates, in the *Gentleman's Magazine*, “ that he is determined to go to church through the same dirty road where his ancestors trudged before him; that if his ancestors had worshipped Belzebub, he would have worshipped Belzebub also; that he wishes to practise physic, as he always has practised it; and that he is a sworn enemy to all *INNOVATION*, in *religion*, *politics*, and *physic*.”

“ If innovation in the practice of physic is to be excluded, adieu to all improvement! It is therefore to be hoped, that those who entertain the same sentiments, already practise it in perfection!”

“ For the sake of others, who have not attained that consummate excellence, so devoutly to be wished,—who consider medicine as in a progressive state,—and, with HIPPOCRATES, deem it an art only to be matured by length of time,—I shall extend my researches; and endeavour to collect, from every quarter, the *testimonies* advanced in favour of this practice, and the *objections* urged against it.”

“ To those who have perused all that has been written in its behalf, and seen the diseases under the mild aspect which it now assumes, any farther attempt to recommend it may appear like a waste of argument; but, having considered

and patiently listening to, and answering all objections \*, he evinced himself both the philosopher and the gentleman.

I. *Respecting the origin of the Cow-POX* Dr. JENNER offers the following conjecture :

He remarks “ that, the active quality of the virus from the horses’ heels is greatly increased after it has acted on the nipples of the cow, as it *rarely* happens that the horse affects the dresser with sores, and as rarely that a milk-maid *escapes* the infection when she milks infected cows. It is most active *at the commencement of the disease*, even before it has acquired a pus-like appearance; indeed I am not confident whether this property in the matter does not entirely cease as soon as it is secreted in the form of pus. I am induced to think it does cease, and

sidered the *prejudices that still prevail, owing to ignorance and misrepresentation*, I esteem it a SACRED DUTY to try to *dispel the mist, and free the mind from delusion*.”

“ Oh ! while adown the stream of time thy name

“ Expanded flies, and gathers all its fame,—

“ Say, shall my little bark attendant fail,

“ Pursue the triumph, and partake the gale!” POPE.

Certainly it will; and the name of RING will pass down the current of time, as one of the most active and able champions of the fame of Dr. JENNER; and his work will be esteemed as a most faithful mirror of the various sentiments excited by, and the progress of, this immortal discovery!

\* Vide further observations on the Variolæ Vaccinæ, or Cow-pox, by E. Jenner, M.D. F.R.S. being a vindication of his former opinions, with additional remarks.

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that

that it is the thin darkish-looking fluid *only*, oozing from the *newly-formed cracks in the heels*\*, similar to what sometimes appears from erysipelatous blisters, which *gives the disease*. Nor am I certain that the nipples of the cows are at *all times* in a state to receive the infection. The appearance of the disease in the spring and early part of the summer, when they are disposed to be affected with spontaneous eruptions so much more frequently than at other seasons, induces me to think, that the virus from the horse must be received upon them when they are in this state, in order to produce effects: experiments, however, must determine these points. But it is clear that when the cow-pox virus is once generated, that the cows cannot resist the contagion, in whatever state their nipples may chance to be, if they are milked with an infected hand."

He goes on to say, "whether the cow-pox is a *spontaneous* disease in the cow, or is to be attributed to matter conveyed to the animal, as I have conceived, from *the horse*, is a question, which, though I shall not attempt now fully to discuss, yet I shall digress so far as to adduce some observations, and give my reasons for taking up an opinion that to some has appeared extremely *fanciful*. The aggregate of these observations, though not amounting to positive proof, forms *presumptive evidence* of so forcible a kind, that I imagine it might on any

\* This observation should be carefully considered by experimenters.



other person have made the same impression it did on me, without fixing the imputation of *credulity* \*.”

“ FIRST.

\* Relative to Dr. WOODVILLE's opposition to Dr. JENNER as to the origin of the Cow-pox, who represents Dr. Jenner as “ *mised*,” (Dr. W— not succeeding in producing the *cow-pox* from the grease in horses,) all we dare at present say is,”—

“ Humanum est errare.” HOR.

a motto which may be as a salvo applied to either party. And we would wish the reader to reflect, that, as long as the *Cow-pock matter* is to be procured with facility for inoculation, this subject may be deemed *speculative*; and concerning the *prejudice* of taking a disease from so useful an animal as a *horse*, or so sweet an animal as a *cow*, is certainly a point *immaterial*. The head-ache yields as readily to *black leeches*, as if they were beautifully variegated; and the *shining splendour* of the Spanish flies is of little consideration to one smarting under a blister, or labouring under strangury. The reader should look only to *facts*; for, whether the *axe* is silver or iron, the stroke is the same.

Dr. Pearson says “ that Dr. PARR (not the Rev.) is the only learned man whom he knew opposed to the cow-pox.” The only eminent author whom I know, who at once conceived a violent prejudice against *vaccine inoculation*, is the learned Dr. MOSELEY, so often mentioned in the notes. Like a counsellor he took advantage of the difference of opinion betwixt Dr. Jenner and Dr. Woodville “ *as to the origin of the cow pox*,” and thus humourously treated a subject too grave and too important for “ serious trifling.”

“ The *cow pox*,” says this writer, “ has lately appeared in England. This is a *new star* in the *ÆSCULAPIAN* system. It was first observed from the provinces. It is so luminous there, that the *greasy-heeled* hind feet of PEGASUS are visible to the naked eye; the *hidden parts* of that constellation, which have puzzled astronomers, as to the *sex* of Pegasus, and which HIPPARCHUS, TYCHO, HEVELIUS, FLAMSTEAD, and

“FIRST. I conceived this was its source, from observing that where the cow-pox had appeared among the dairies here (unless it could be traced to the introduction of an infected cow or servant), it had been preceded at the farm by a horse diseased in the manner already described, which horse had been attended by some of the milkers.”

“SECONDLY. From its being a popular opinion throughout this great dairy country, and from its being insisted on by those who here attend sick cattle.”

“THIRDLY. From the total absence of the disease in those countries where the men servants are not employed in the dairies.”

“FOURTHLY. From having observed that morbid matter generated by the horse frequently com-

HERSCHEL, could never discover. The reason now is evident. The medical PYTHONISSAS are divided in their opinions respecting this phenomenon.”

But, to do justice to my friend Dr. MOSELEY, after this display of *deep-reading*, and *queries too ludicrous* to be delivered, I think, in earnest, he concludes, “I wish it to be understood, I mean no *disrespect* to the *ingenious*, nor to *discourage inquiry*; THE OBJECT WELL DESERVES IT:—all I desire is, that *this subject* may undergo a *deep, calm, and dispassionate* scrutiny. *In the mean time*, I would guard parents against suffering their children becoming *victims to experiment*.” The language used, however, as might be expected, gave universal offence; and what was said half in joke, was supposed to be meant in gravity; and it was imagined that such opinions might fizzle the inquiry; but, according to an old adage, “*Magna est veritatis potentia, et prævalebit.*”—

municates,

municates, in a casual way, a disease to the human subject so like the cow-pox, that in many cases it would be difficult to make the distinction between one and the other."

"FIFTHLY. From being induced to suppose, from experiments, that some of those who had been thus affected from the horse resisted the small-pox."

"SIXTHLY. From the progress and general appearance of the pustule on the arm of the boy whom I inoculated with matter taken from the hand of a man infected by a horse; and from the similarity to the cow-pox of the general constitutional symptoms which followed."

"One instance has lately occurred to me," adds Dr. JENNER, "of the system being affected from the matter issuing from the heels of horses, and of the person remaining afterwards unsusceptible of the variolous contagion; and another, where the small-pox appeared obscurely."

"THOMAS PEARCE is the son of a smith and farrier near to this place. He never had the cow-pox; but, in consequence of dressing horses with *fore heels* at his father's, when a lad, he had sores on his fingers which suppurated, and which occasioned a pretty severe indisposition. Six years afterwards I inserted variolous matter into his arm repeatedly, without being able to produce any thing more than slight inflammation, which appeared very soon after the matter was applied, and

afterwards I exposed him to the contagion of the small-pox with as little effect."

"Mr. JAMES COLE, a farmer in this parish, had a disease from the *same source* as related in the preceding case, and some years after was inoculated with variolous matter. He had a little pain in the axilla, and felt a slight indisposition for three or four hours. A few eruptions shewed themselves on the forehead, but they very soon disappeared without advancing to maturation."

"It is a remarkable fact, and well known to many, that we are frequently foiled in our endeavours to communicate the small-pox by inoculation to blacksmiths, who in the country are farriers. They often, as in the above instance, either resist the contagion entirely, or have the disease anomalously. Shall we not be able *now* to account for this on some rational principle?"

"I fear it would be trespassing too far on the patience of my readers to adduce the *general testimony* of our farmers in support of this opinion; yet I beg leave to introduce an extract of a letter on this subject from the Rev. Mr. Moore, of Chalford Hill, in this county."

"In the month of November, 1797, my horse had diseased heels, which was certainly termed the *grease*; and at a short subsequent period my cow was also affected with what a neighbouring farmer (who was conversant with the complaints of cattle) pronounced to be the *cow-pox*, which he at the  
same



same time observed my servant would be infected with: and this proved to be the case; for he had eruptions on his hands, face, and many parts of the body, the pustules appearing large, and not much unlike the small-pox, for which he had been inoculated a year and a half before, and had then a very heavy burthen. The pustules on the face might arise from contact with his hands, as he had a habit of rubbing his forehead, where the sores were the largest and thickest."

"The boy associated with the farmer's sons during the continuance of the disease, neither of whom had had the small-pox, but they felt no ill effects whatever. He was not much indisposed, as the disease did not prevent him from following his occupations as usual. No other person attended the horse or milked the cow, but the lad above mentioned. I am firmly of opinion that the disease in the heels of the horse, which was a *virulent grease*, was the cause of the servant's and the cow's malady."

"The origin of the cow-pox," says Mr. RING, the very able advocate of Dr. Jenner, in a letter he published in the London Medical Review, "is now clearly ascertained. Dr. Jenner lately sent me some matter which Mr. TANNER, of Rockhampton in Gloucestershire, produced by inoculating a cow from *the heel of a horse*; and also from the dairy-maid who milked the cow. The former, being taken at a very late period of the disease, failed; but the

latter took place, and the *true vaccine pustule* has been excited by it four or five times successively."

"When Dr. MARSHALL, of Stonehouse, was consulted about the dairy-maid of a farmer in his neighbourhood, he perceived four or five pustules on the back of her hand. Upon inquiry, it was found that the cow-pox was in the farm; and that the farmer's son, one morning when he had been dressing *the heels of a horse*, milked the cow in which the disease afterwards broke out, because she was too unmanageable for the milk-maid."

"Mr. RANKIN, an eminent surgeon, of East-bourn, lately sent me a case of a disease, occasioned by matter from *the horse's heel*, greatly resembling the cow-pox; and I am informed by good authority, that Sir Christopher Pegge is possessed of evidence, to prove the truth of the opinion advanced by Dr. Jenner."

In the Medical Journal for November, we have the pleasure, as hinted above, to find a letter from Sir CHRISTOPHER PEGGE, the learned reader on anatomy in the university of Oxford, concerning the origin of the vaccine virus.

In this letter Sir Christopher Pegge relates a series of facts, tending to establish Dr. Jenner's opinion, that the cow-pox is originally produced by the matter of *grease*. These facts were communicated to Sir Christopher Pegge by Mr. Lupton, surgeon, of Thame.

Sir Christopher Pegge says, "the attention of  
Mr.

Mr. LUPTON was first drawn to the present subject in March last ; when the son of Mr. WRAY, farmer, of Ichford, applied to him on account of a complaint in his hand, attended with ulcerations very much resembling the cow-pox. There was evidently a very great derangement of the system, and the symptoms plainly indicated an absorption of the morbid matter ; as the case was also attended with considerable swelling of the hand and arm, an enlargement of the axillary glands, rigors, pain in the head and back, together with a greatly increased quickness of the circulation."

" He could only account for these complaints, from his having washed *the ulcerated heels of a horse* ; having had no previous communication with the cows."

" These circumstances led Mr. LUPTON to conceive, that there might be a disease incident to the horse, analogous to the cow-pox, and communicable to the cow ; and, upon repeated inquiry, he was satisfied, that it was not the common grease to which horses are liable, that had produced the above effects."

" Mr. Lupton was so good as to communicate this information to me at the time ; treating it as a matter of curiosity rather than of *serious* investigation ; and I heard no more of him on this subject, till the 8th of April, when I received the following letter :

" Dear

“ Dear Sir,

“ Since my last letter respecting Mr. WRAY's son, I have had another case of infection communicated to the human subject; owing to matter absorbed from the *ulcerated heels of a horse*. The person is RICHARD HUNT, a servant of Mr. Randolph, of Thame-Park Farm; whose first symptoms were stiffness and uneasiness of the arm, swelling of the axillary glands, succeeded by pustules on the hand, and a very painful suppuration of the middle finger; which had that blue appearance described by Dr. Jenner, as indicating the *true vaccine disease*. These were accompanied with rigors frequently recurring, attended with great heat, anxiety, giddiness, pain in the head and back, sickness and vomiting.”

“ Such were the appearances when I first saw him, which was on Sunday, March 30. On the 31st, he had a very bad night, and had been slightly delirious; the other arm growing stiff and painful. April 1st, he was much better in every respect, except the painful state of the finger, and the inflammation of the hand and arm. The course of the lymphatics was at this time beautifully marked with streaks of a vivid red colour, extending from the wrist to the axilla. April 2d, he continued better. April 3d, he had a bad night, from the pain of the finger. A puncture was now made, and about two tea-spoonfuls of a dark brown coloured fluid were discharged.”

“ April



" April 4th, the cuticle was removed; and discovered a shining red ulcerated surface, in the middle of which was a spot of a sloughy appearance, of the size of a silver penny. This was covered with the red nitrate of quicksilver. The inflammation, pain, and swelling of the hand and arm, were now considerably abated; and in other respects he was much relieved. April 6th, the finger was much better; the pustules of the hand had a *dark-coloured depression in the centre, surrounded with an elevated margin of matter*. From this time he had no complaint. It must be particularly remarked, that this man has not milked any cow since last Michaelmas."

We are then informed, "that on the 9th of April, JOHN WATSON, another servant of Mr. Randolph, applied to Mr. Lupton, with symptoms similar to those of the former; in consequence of having assisted Hunt in dressing *the heels of the horse*. WATSON was employed in milking the cows. Previous to the appearance of ulceration on his hands, the cows had been infected more than a week; and there can be no doubt that the cows had received infection from the horse, through the medium of this man."

"Whether the ulceration in his hands was the immediate effect of matter received from the heels of the horse, or of that which had undergone a modification in the teats of the cow," Sir Christopher PEGGE observes, "it is not easy to decide; but he  
has

has no doubt that the virus was conveyed by this man from the heels of the horse to the teats of the cow."

On the 18th of May Sir Christopher PEGGE happened to be at Thame, and was informed by Mr. Lupton, "that a *third* servant of Mr. Randolph was affected in a similar manner; and it was evident he had received the infection *from the cows*; as he had never assisted in dressing the heels of the horse. The disorder from which this virus originates, we are told by Sir Christopher Pegge, is termed by farriers a scratchy heel; and considered as widely different from common grease."

From the list of these men, Mr. Lupton inoculated several children; whom Sir Christopher Pegge saw on the eighth day after inoculation, with the most decided appearance of *true cow-pox* upon them. "This appearance (he says) he could not mistake, after having witnessed so many instances of it at his friend's, (Mr. FERMOR's) of Tusmore; whose benevolent and disinterested exertions have contributed so largely to the stock of facts in support of a discovery which promises to be of the greatest benefit to mankind."

"In all the children who were inoculated with this matter, the disease terminated favourably; and as neither of them has had the small-pox, Mr. Lupton inoculated them with variolous matter, but *without effect*."

As the *origin* of the cow-pox appears to be of  
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the utmost importance, as *the grease* of the horse can produce the cow-pox at pleasure, or, if not the cow-pox, might itself be used as a substitute for it; I shall beg leave to trespass a little longer on my readers, and adduce a fresh authority of considerable weight.

A young man, a butcher at Middleton near Pickering in Yorkshire, applied to Dr. Lox on account of painful sores on both hands.

These shewed a surrounding inflammation, and formed themselves into vesicles.

A tumour arose also under the arm-pits, which soon after dispersed.

A considerable degree of fever accompanied for a time the disease.

The patient could not account for it otherwise than from applying remedies to the heels of a horse affected with the *grease*.

Two experiments with different cows were immediately commenced.

#### *Experiment I.*

In the *one* the fluid limpid matter immediately issuing from the *grease* of the horse was inserted into the teat of a cow.

On the *fifth* day the wound appeared rather elevated, and a faintish redness succeeded.

In a few days a vesicle formed containing a large quantity

quantity of watery fluid, of a purple tinge, as in the cow-pox.

### *Experiment II.*

In the *other* cow, the matter was taken from the hand of the patient mentioned above, and inserted into the udder.

On the *ninth* day there presented itself a vesicle surrounded by a rose-coloured rim.

The udder to a considerable extent was hard and painful, so that the animal would hardly suffer it to be handled.

The vesication continued to spread for several days, until it scabbed, and healed without any remedy.

### *Experiments III. & IV.*

From *both these cows* on the *ninth day* matter was taken, and inserted into the arms of two different patients.

The progress of the inoculation was closely watched, and the vesication, inflammation, and scabbing, was found *exactly* to correspond with the appearances presented by a mild inoculated cow-pox.

Both these children were afterwards plentifully inoculated with the small-pox virus, *but without producing the disease.*

*Experiment*



*Experiment V.*

Dr. Lox's next experiment was with the fluid of the grease itself not modified by being ingrafted in the cow.

On the *third* day after the insertion a small inflammation surrounded the incision.

On the *fourth* the inoculated part was much elevated, and a vesicle, of a purple colour, was completed on the *fifth*.

On the *sixth* and *seventh* the vesicle increased, and the inflammation extended, and became of a deeper colour.

Then arose the feverish symptoms, as heat, pain in the head, difficulty of breathing, quick pulse, tongue white, thirst, sickness, vomiting, which continued from the *seventh* to the *ninth* day.

This patient was inoculated with the small-pox virus, but without its producing the disease.

*Experiment VI.*

From this patient, but one remove from the horse, on the *sixth* day matter was taken, and five children were inoculated, which succeeded in each, and took on the character of the mild cow-pock.

On the *tenth* day they were each inoculated with the small-pox, but nothing appeared from the insertion of the variolous matter, except a very small degree

degree of inflammation, which vanished on the fifth day \*.

2. Dr. JENNER *distinguishes the spurious from the real cow-pox.*

"In the course of the investigation of this subject," says this accurate Examiner into nature, "which, like all others of a complex and intricate nature, presented many difficulties, I found that some of those *who seemed to have undergone the cow-pox*, nevertheless, on inoculation with the small-pox, felt its influence just the same as if no disease had been communicated to them from the cow. This occurrence led me to inquire among the medical practitioners in the country around me, who all agreed in this sentiment, that the cow-pox was not to be relied upon as a *certain* preventive of the small-pox. This for awhile damped, but did not extinguish, my ardour; for, as I proceeded, I had the satisfaction to learn that the cow was subject to some varieties of spontaneous eruptions upon her teats; that they were all capable of communicating sores to the hands of the milkers; and that whatever sore was derived from the animal, was called in the dairy the cow-pox. Thus I surmounted a great

\* Vide "*An Account of some experiments on the origin of the Cow-pox*" by JOHN LOY, M.D." A very ingenious pamphlet, which we would recommend to the careful perusal of those who wish to make experiments on this subject; as *the grease*, from other trials, is proved in the same book *incapable*, in every instance, of producing the disease required.

obstacle, and, in consequence, was led to form a distinction between these diseases, one of which only I have denominated the *true*, the others the *spurious*\*, cow-pox, as the latter possess no specific power of guarding the constitution."

"This impediment to my progress was not long removed, before another, of far greater magnitude in its appearance, started up. There were not wanting instances to prove, that when the *true* cow-pox broke out among the cattle at a dairy, a person who had milked an infected animal, and had thereby apparently gone through the disease in common

\* One of the chief objects, then, of our pursuit, as I have observed, should be, to learn how to *distinguish* with accuracy between that peculiar pustule which is the *true* cow-pock, and that which is *spurious*. Until experience has determined this, we view our object through a mist. Let us for instance suppose, that the small-pox and the chicken-pox were at the same time to spread among the inhabitants of a country which had never been visited by either of these distempers, and where they were quite unknown before; what confusion would arise! The *resemblance* between the symptoms of the eruptive fever and between the pustules in either case would be so striking, that a patient, who had gone through the chicken-pox to any extent, would feel equally easy with regard to his future security from the small-pox, as the person who had actually passed through that disease.—As far as I could learn, the *spurious* pustules are of a much milder nature than those which arise from that contagion which constitutes the *true* cow-pox. They are always free from the *bluish* or *livid* tint, so conspicuous in the pustules of that disease. No erysipelas attends them, nor do they shew any phagedenic disposition as in the other case; but *quickly terminate in a scab*, without creating any apparent disorder in the cow. JENNER.

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with

with others, was liable to receive the small-pox afterwards. This, like the former obstacle, gave a painful check to my fond and aspiring hopes: but reflecting that the operations of nature are generally uniform, and that it was not probable the human constitution (having undergone the cow-pox) should in some instances be perfectly *shielded* from the small-pox, and in many others remain *unprotected*, I resumed my labours with redoubled ardour. The result was fortunate; for I now discovered that the virus of the cow-pox was liable to undergo *progressive changes* \*; and that, when it was applied to the human skin in its degenerate state, it would produce the ulcerative effects in as great a degree

\* This observation will fully explain the *fertile source* of those errors which have been committed by many inoculators of the cow-pox. Conceiving the whole process to be so extremely simple, as not to admit of a mistake, they have been heedless about the *state* of the vaccine virus; and finding it limpid, as part of it will be, even in an *advanced stage* of the pustule, when the greater portion has been converted into a scab, they have felt an improper confidence, and sometimes mistaken a *spurious pustule*, which the vaccine fluid in this state is capable of exciting, for that which possesses the perfect character. After the *ninth* day it is uncertain, whether the *genuine* cow-pock will be produced. Another source of the *spurious* disease has arisen also from the *true early* matter of the cow-pock being taken on a lancet; this has corroded the iron, and the matter then will only produce a *common ulcerating sore*, having none of the *genuine* characters of the cow-pock.—Holding the matter before the fire to dry it will immediately take away its specific virtue. The heat of the body has produced the same effect. JENNER.



as when it was not decomposed, and sometimes far greater; but, having lost *its specific properties*, it was incapable of producing that change upon the human frame which is requisite to render it unsusceptible of the variolous contagion: so that it became evident a person might milk a cow *one day*, and, having caught the disease, be for ever secure; while another person, milking the same cow the *next day*, might feel the influence of the virus in such a way as to produce a sore or sores, and in consequence of this might experience an indisposition to a considerable extent; yet, as has been observed, the *specific* quality being lost, the constitution would receive no change so as to render it secure from the small-pox."

3. Dr. JENNER *first attempts the regular inoculation of the cow-pox.*

"During the investigation of the casual cow-pox, I was struck," continues the great Dr. JENNER, "with the idea that it might be practicable to propagate the disease by *inoculation*, after the manner of the small-pox, first from the cow, and finally from one human being to another. I anxiously waited some time for an opportunity of putting this theory to the test. At length the period arrived."

#### CASE I.

The first experiment was made upon a lad of the name of PHIPPS, in whose arm a little vaccine virus

was inserted, taken from a pustule on the hand of a dairymaid\* who was infected by her master's cows, and it was inserted on the 14th of May, 1796, by means of two superficial incisions, barely penetrating the cutis. By the *fourth* day a pustule† appeared. On the *seventh* he complained of uneasiness in the axilla, and on the *ninth* he became a little chilly, lost his appetite, and had a slight head-ache. During the whole of this day he was perceptibly indisposed, and spent the night with some degree of restlessness, but on the day following he was *perfectly well*.

The appearance of the incisions in their progress to a state of maturation were much the same as when produced in a similar manner by variolous matter. The only difference which I perceived was, in the state of the *limpid fluid* arising from the action of the virus, which assumed rather a darker hue, and in that of the efflorescence spreading round the incisions, which had more of an *erysipelatous look* than we commonly perceive when variolous matter has been made use of in the same manner; but the whole died away (leaving on the

\* From the fore on the hand of Sarah Nelmes.—See the preceding case and plate, page 28, of Jenner's Inquiry.

† This appearance was in a great measure new to me, and I ever shall recollect the pleasing sensations it excited; as, from its similarity to the pustule produced by variolous inoculation, it incontestibly pointed out the close connexion between the two diseases, and almost anticipated the result of my future experiments. JENNER.

inoculated parts *scabs* and subsequent *ischars*) without giving me or my patient the least trouble.

This case inspired me with confidence; and, as soon as I could again furnish myself with virus from the cow \*, I made an arrangement for a series of inoculations. A number of children were inoculated in succession, one from the other; and after several months had elapsed, they were exposed to the infection of the small-pox; some by inoculation, others by variolous effluvia, and some in both ways; *but they all resisted it*, as will be shewn hereafter.

## CASE II.

WILLIAM SUMMERS, a child of five years and a half old, was inoculated the same day with Baker, with matter taken from the nipples of one of the infected cows, at the farm alluded to in note below.

He

\* My researches were interrupted till the spring of the year 1797, when, from the wetness of the early part of the season, many of the farmers' horses in this neighbourhood were affected with *fore heels* (the grease in its first stage) in consequence of which the *cow-pox* broke out among several of our dairies, which afforded me an opportunity of making further observations upon this curious disease.

A mare, the property of a person who keeps a dairy in a neighbouring parish, began to have fore heels the latter end of the month of February 1798, which were occasionally washed by the servantmen of the farm, THOMAS VIRGOE, WILLIAM WHERRET, and WILLIAM HAYNES, who, in con-

He became indisposed on the *sixth* day, vomited once, and felt the usual slight symptoms till the *eighth* day, when he appeared perfectly well.

### CASE III.

From William Summers the disease was transferred to WILLIAM PEAD, a boy of eight years old, who was inoculated March 28th.

On the *sixth* day he complained of pain in the axilla, and on the *seventh* was affected with the common symptoms of a patient sickening with the small-pox from inoculation, which did not terminate till the *third day* after the seizure.

The *efflorescent bluish* around the part punctured in the boy's arm was truly characteristic of that which appears on variolous inoculation.

### CASE IV.

April 5th, *several children and adults* were inoculated from the arm of William Pead.

sequence, became affected with sores in their hands, followed by inflamed lymphatic glands in the arms and axilla, shiverings succeeded by heat, lassitude and general pains in the limbs. A single paroxysm terminated the disease; for within twenty-four hours they were free from general indisposition, nothing remaining but the sores on their hands. HAYNES was daily employed as one of the milkers at the farm, and the disease began to shew itself among *the cows* about ten days after he first assisted in washing the mare's heels. Their nipples became sore in the usual way, with *bluish* pustules. JENNER.

HANNAH



HANNAH EXCELL, an healthy girl seven years old, and one of the patients abovementioned, received the infection from the insertion of the virus under the cuticle of the arm in three distinct points \*. The pustules which arose in consequence, so much resembled, on the *ninth day*, those appearing from the insertion of variolous matter, that an experienced inoculator would scarcely have discovered a shade of difference at that period. Experience now tells me that almost the only variation which follows consists in the pustulous fluids remaining *limpid* nearly to the time of its total disappearance; and not, as in the direct small-pox, becoming *purulent*.

#### CASE V.

From this girl's arm matter was taken and transferred to that of J. BARGE, a boy of seven years old.

He sickened on the *eighth day*, went through the disease with the *usual slight symptoms*, and without any inflammation on the arm beyond the common efflorescence surrounding the pustule, an appearance so often seen in inoculated small-pox.

\* This was not done intentionally, but from the accidental touch of the point of the lancet, one puncture being always sufficient. JENNER.

*Proofs that these having had the cow-pock were rendered insusceptible of the small-pox.*

“ In order to ascertain whether my first patient PHIPPS, after feeling so slight an affection of the system from the cow-pox virus, was secure from the contagion of the small-pox, he was inoculated the 1st of July following with variolous matter, immediately taken from a pustule.”

“ Several slight punctures and incisions were made on both his arms, and the matter was carefully inserted, *but no disease followed.*”

“ The same appearances were observable on the arms as we commonly see when a patient has had variolous matter applied, after having either the cow-pox or the small-pox.”

“ Several months afterwards he was again inoculated with variolous matter, but *no sensible effect was produced.*”

“ It did not appear necessary, nor was it convenient to me, to inoculate the whole of those who had been the subjects of these late trials; yet I thought it right to see the effects of variolous matter on some of them, particularly WILLIAM SUMMERS, (vide Case III.) the first of these patients who had been infected with matter taken from the cow.”

“ He was therefore inoculated with variolous matter from a fresh pustule; but, as in the preceding cases, *the system did not feel the effects of it in the smallest degree.*”

“ I had

“I had an opportunity also of having BARGE (Case V.) and WILLIAM PEAD (Case III.) inoculated by my nephew, Mr. Henry Jenner, whose report to me is as follows: “I have inoculated PEAD and BARGE, two of the boys whom you lately infected with the cow-pox. On the *second* day the incisions were inflamed, and there was a pale inflammatory stain around them. On the *third* day these appearances were still increasing and their arms itched considerably. On the *fourth* day the inflammation was evidently subsiding, and on the *sixth* it was scarcely perceptible. *No symptom of indisposition followed.*”

“To convince myself that the variolous matter made use of was in a perfect state, I at the same time inoculated a patient with some of it who had never gone through the cow-pox, and it produced the *small-pox* in the usual regular manner.”

“These experiments,” says Dr. JENNER, “afforded me much satisfaction; they proved that the matter in passing from one human subject to another, through five gradations, lost none of its original properties, J. BARGE being the *fifth* who received the infection successively from WILLIAM SUMMERS, the boy to whom it was communicated from the cow.”

These cases of vaccine inoculation, added to a more extended experience, led to the FOLLOWING CONCLUSIONS.

## FIRST

## FIRST CONCLUSION.

*Those who have had the cow-pox, either naturally, or by inoculation, are ever after insusceptible of the small-pox.*

Both these positions were before proved by Dr. JENNER, and indeed the natural and inoculated cow-pox resemble each other so much, except in the parts \* affected, that we should be surpris'd, if they were found to differ in their properties. They therefore illustrate each other.

When inoculation of the *small pox* was first introduced, there was a dispute whether or not these two diseases were one and the same. "In the first place," says the learned MEAD, "there are some, who insist upon it, that the eruptions produced by inoculation are not the genuine small-pox, and con-

\* The author of this pamphlet has inoculated in the arms, legs, neck, fingers, and different parts of the body, without finding a material difference with respect to the disease. It is so uniformly mild, that the shades of difference from the parts infected seem unimportant. The leg in female infants has been, however, preferred, and in boys the lower part of the arm, as being parts farthest removed from the fountain of circulation, and hence less subject to active inflammation, the chief or only consideration in this disease which is often unaccompanied with any constitutional affection,

sequently



frequently that they cannot secure any one from having the disease *hereafter* \*. Moreover, they take pains to bring testimonies of patients, who, after having undergone the artificial distemper, have nevertheless been *afterwards* seized with the "true one." "Now," continues Mead, "I own, I cannot understand how contagion, that is, the very seed of the disease, should produce, not its own proper distemper, but another of a quite different kind. Neither certainly does it matter, by which

\* We had not been so diffuse in this part, more than the subject indeed merits, unless the objection against the cow-pox had been frequently urged, "that it only secures *for a time*."

"In this *coro mania*," says my learned friend Dr. MOSELEY, (who, it is to me most extraordinary should have been the *first* to conceive and propagate the most glaring errors respecting vaccine inoculation), "it is not," says this *περὸ φησὶς κακῶν*, "enough for reason to conclude, that the cow-pox may lessen *for a time* the disposition of the habit to receive the infection of the small-pox. All cutaneous determinations, catarrhal fevers, and every disease of the lymphatics, and medicines tending to what Sydenham would call depurating the system, *do the same*." Again, "Who can foretell what misery, from this cause, may not be brought on a family after *many years* of IMAGINARY SECURITY!"—Such, with more weight, were the arguments, as we see, urged against *various* inoculation at its *introduction*, which apply certainly much less to the cow-pox, as this disease is only taken by contact of the virus with an abraded cuticle, and therefore is, in fact, an *inoculation*; and Dr. JENNER with others have given us *certain* proofs of SIXTY-THREE YEARS *security* arising from the *natural*, or *casual*, *cow-pox*.

way the infection is received, provided it brings forth manifest marks of the disease. And as to those, who, after having been inoculated with success, are, notwithstanding this, said to have suffered the small-pox ; I must protest, that, after the most diligent inquiry, I have not been able to find out one convincing proof of this kind. I very well know, that *a story* is spread abroad, particularly by a late author, of a boy, upon whom, about three years after he had contracted the disease by inoculation, it broke out again. But I am well assured, that this narration is of doubtful credit ; and that there were some of the family who affirmed, that no small-pox appeared upon the inoculation ; that the parents (as we easily believe what we wish) and that the byestanders did not care to take away from them this pleasing mistake."

"But, to speak plainly, if such a thing happened once, why do we not see it come to pass oftener ? Or what can a single example, supposing it to be true and certain, avail, when innumerable experiments have produced nothing like it ? However, some men are infected with an incurable itch of writing, and take great pleasure in contradicting others, to whom they bear envy. Let us therefore give them leave to applaud themselves, and enjoy their own vain glory."

## SECOND CONCLUSION.

*Those who are labouring under the natural, or inoculated cow-pox, cannot communicate this disease by contagion.*

The only admission of the *cow-pox* is by actual meeting of the vaccine fluid with an abraded surface, as some sore, scratch, chop, or crack of the cuticle; for the sound flesh, and likewise the breath, denies an avenue to this glorious *antidote*, the true *Mithridate*, of one of the most tremendous of the animal poisons, which has laws *peculiar* to itself, little known, and deserving attention.

When the *small-pox* invades a village or town, terror and dismay are spread in every direction. Supposing the air to be infected, some people carry their fears so far that they will not come even within a mile of the infected place; and to pass the door of the house where the *small-pox* is contained would be esteemed an act of the greatest hardihood. In order that we may know how far our fears are grounded, we must have recourse to experiments actually made by inquiring physicians.

“Having tried many fruitless experiments, I concluded,” says Dr. O’Ryan, “that the children, the objects of them, could not have escaped infection, but because the variolous matter had lost that spring, and that degree of energy, which, perhaps,  
it

it may possess on arising immediately from the human body, I therefore placed a person, in the eruptive fever of the small-pox by inoculation, at the distance of about half a yard from four children properly prepared ; each exposure continued one hour, and was repeated daily for a fortnight, reckoning from the commencement of the fever till the pustules were become perfectly dry : not one of the four received the infection. Two months afterwards I inoculated three of these children : they had the distemper in the usual mild manner, and recovered without difficulty."

"I can," says Dr. Currie, "bring many facts, to prove that the contagion has spread a very little way into the atmosphere in situations where many patients have been confined together, and consequently the quantity of effluvia greatly multiplied. These are chiefly from the accounts of our Guinea voyages, in which the small-pox used formerly to make, at times, dreadful havoc among the slaves. The practice, however, of late years has been, immediately on the appearance of the casual disease on shipboard, to inoculate the whole cargo ; and nothing can speak more forcibly the safety of inoculation, than the complete success with which it has generally been attended on persons of all ages, entirely unprepared, and under circumstances every way unfavourable. As, however, a general inoculation, under such circumstances, is always followed by unpleasant, and sometimes by destructive consequences,



sequences, it is not now uncommon to separate the diseased persons, and to trust to means of prevention for the safety of the rest. These frequently, perhaps, I might say generally, succeed, provided the voyage is performed with light and favourable winds, which is necessary to enable them to make the separation complete. An instance of this has just occurred in a Guineaman, called the *Golden Age*. Soon after she left the coast of Africa the small-pox appeared, and, before the disease was known, eight persons were affected; the whole were immediately brought on deck, their apartments washed and ventilated with the greatest care, and the eight persons ill were placed in the main-top about twenty feet from the deck, where they regularly passed through the disease. Before coming down, they were washed, the contagion was extinguished, and the whole cargo, as well as crew, arrived in perfect health in the West Indies. During all this time, the slaves, as is usual, passed the day near them; but, though all were supposed liable to the disease, not one of two hundred and upwards thus exposed received the infection. My friend Mr. Beg, formerly surgeon, afterwards master, of a Guineaman, and now a considerable merchant here, informs me, that, in one of his voyages, he practised the same method of stopping the contagion of this disease, and with the same success. He acquaints me also, that twice, when the small-pox appeared among the slaves, while they were at anchor on the coast, he put the infected persons in  
 a boat

a boat a-stern of the ship, and effectually secured the people on board from the contagion."

I relate these facts to shew how far the power of our worst enemy reaches, for, like a lion confined in a den, we may approach the railing to a certain distance with safety: but unfortunately the poison may be, and is often, put up in the clothes, and thus widely spreads its baneful influence around.

The *cow-pox* patient, on the contrary, may be approached, as near as we please, and the apparel does not imbibe one particle of infectious matter to propagate this distemper.

"Many instances," says Dr. Jenner, "have come under my observation, which justify the assertion that the disease cannot be propagated by effluvia. The first boy whom I inoculated with the matter of cow-pox, slept in a bed, while the experiment was going forward, with two children who never had gone through either that disease or the small-pox, *without infecting either of them.*"

"A young woman who had the cow-pox to a great extent, several sores which matured having appeared on the hands and wrists, slept in the same bed, with a fellow dairy-maid who never had been infected with either the cow-pox or the small-pox, *but no indisposition followed.*"

"Another instance has occurred of a young woman on whose hands were several large suppurations from the cow-pox, who was at the same time a daily nurse to an infant, *but the complaint was not communicated to the child.*"

## THIRD CONCLUSION.

*None die of the Cow-pox either taken naturally or from inoculation.*

*The cow-pox never kills, the natural and inoculated small-pox not unfrequently.*—If the whole merit of the cause of *vaccine inoculation* depended on this single point, it might rest secure as the greatest discovery ever made. *The cow-pox never destroys life!*—Glorious tidings!—Happy annunciation!—I who have lost by *variolous inoculation* my first-born child; a boy, who, not alone in his parent's eye, but to all who knew him, promised the fulfilment of every wish, have a just right to exult in the present fortunate discovery of Dr. JENNER. How was his lovely form defaced, and what were his sufferings, before death snatched him to an early tomb, has been drawn by me with a trembling hand, when I wrote my section on the symptoms and ravages of the small-pox!—So faithful is the portrait that I have often witnessed tears to flow in abundance, when this section has been read by others, as bringing to recollection many a similar distressing scene exhibited by some favourite child, or by some friend's or relation's child.—*My tears are now wiped away, and may theirs be also, by the pleasing view of the present ameliorated condition of humanity!*

## FOURTH CONCLUSION.

*The Cow-pox never disfigures the countenance.*

To all who have the refined sentiment of taste, and contemplate the human form as the master-piece of creative power, and acknowledge, that female charms are destined by the ALMIGHTY as the zest of otherwise a vapid existence, must grant every praise to the *Jennerian discovery*, which is never known to disfigure (as does often the natural and inoculated small-pox) "the human face divine."—Although external appearances are not of themselves solely to be desired, I ask, where is the parent, who does not wish for her daughters to possess a pure unblemished heart in an elegant and pleasing person? For often at the very first glance the soul takes fire, and soon after joins in holy bands of wedlock, the two sexes destined by PROVIDENCE to make each other happy. But, when the features are all changed, the nose drawn inward, a speck perhaps in both eyes, and horrid seams pervade the pallid cheek, the mind of sensibility revolts at the ruins of fair nature, and marriage is prevented unless for the sake of sordid pelf!—I shall here beg leave to make a quotation from Dr. Beddoes's

*"Hygeia."*



“*Hygeia* \*.” “What impression,” says this sagacious writer, “does not a fallow unwholesome complexion, *seams from the small-pox*, scrophulous scars, and those marks which debauchery is apt to stamp upon the face, make upon the spectator? Is he not in general disposed to turn away in disgust from these appearances? or, if politeness forbid him to give way to his feelings, do they not rise to a greater height for being suppressed?—And in what manner does the mind of those who perceive themselves to be objects of aversion react?—Instead of going for an answer to the theory, which explains how our habits are formed, I shall bring one of the most sagacious of self-observers to speak for himself. The late professor, J. GEORGE BUSCH, whose memory the city of Hamburgh is at this moment employed in honouring, tells of his having had the *small-pox* at nine years old, and, though they were attended with no imminent danger, they left him *badly marked*. “I was afterwards informed,” says this philosopher, “that previously to this affliction I had a comely appearance. For myself, I had never attended to the point. But one thing I know well. After this time, I perceived that those who visited my parents, universally withheld from me that kindness of attention, which with

\* “*Hygeia, or a series of Essays on the means of avoiding habitual sickness, and premature mortality, on a plan entirely popular*, by THOMAS BEDDOES, M. D.” A work admirably conceived, and likely to be productive of the greatest benefit to the human race!

a child is the first motive to render himself agreeable, though they shewed it to my well-looking brothers and sisters, all the pranks that I, poor *pock-pitted* boy, to whose feet no dancing-master had given the right position, or drawn the head from between the shoulders, played in my vivacity, might indeed have been performed with an ill grace."

"This too, I should observe, was the period when the chief art of education consisted in hard words and blows. On me reproaches rained from all quarters. When my parents, who alone treated me with any degree of sense, carried me to Haarb-urg, my grandmother and a brisk grand-aunt so *maltreated* poor George, that my father and mother were extremely unwilling I should repeat the visit. In my grandfather's favour I stood all the higher, for he was stock-blind; so could not judge of me by my exterior."—From his subsequent history—particularly from the hypochondriacal complaint into which he afterwards fell—it should seem that this man, wise and useful as he proved, never entirely recovered of the wound inflicted on his tender mind. What then can be hoped where fewer resources exist, and fewer favourable circumstances concur in riper years?

## FIFTH CONCLUSION.

*The Cow-pox never deprives any one of sight.*

There scarce needs a comment on the advantage of the *cow-pox* over the *small-pox*, as here stated.

stated.—The blessing of vision, so often destroyed by a *small-pox pustule* settling on the eye, is but too obvious to be much insisted on. How feelingly does MILTON deplore this loss!

———— Thus with the year  
*Seasons return ; but not to me returns*  
 Day, or the sweet approach of ev'n or morn,  
 Or sight of vernal bloom, or summer's rose,  
 Or flocks, or herds, or human face divine ;  
 But cloud instead, and ever-during dark,  
 Surrounds me,—from the cheerful ways of men  
 Cut off,—and for the book of knowledge fair  
 Presented with an universal blank  
 Of nature's works, to me expung'd and raz'd,  
 And wisdom at one entrance quite shut out.

## SIXTH CONCLUSION.

*The Cow-pox does not leave any bad humours after it.*

The *small-pox* has been justly accused of often leaving the body in that state of wretched debility, as to make life afterwards only a continued series of excruciating affliction. Besides other horrid disfigurements of the person, *scrophula*, or the king's-evil, not unfrequently follows the natural or inoculated small-pox. The insertion of the humour of a brute into the human body in *vulgar* conception led *a priori* to the expectation of a loathsome distemper. But fortunately for the human race a more benign disease than the *small-pox* was the consequence, and

one only fimiliar to it, in having a fomewhat refembling puftule \*, and in the property, of ever after fecuring from that fatal and loathfome diftemper.

“ Every praftitioner in medicine,” fays Dr. Jenner, “ who has extenfively inoculated with the *fmall-pox*, or has attended many of thofe who have had the diftemper in the natural way, muft acknowledge that he has frequently feen fcrophulous affections, in fome form or another, fometimes rather quickly fhewing themfelves after the recovery of the patients. Conceiving this fact to be admitted, as I prefume it muft be by all who have carefully attended to the fubject, may I not afk, whether it does not appear probable that the general introduction of the *fmall-pox* into Europe has not been among the leaft conducive means in exciting that formidable foe to health? Having attentively watched the effects of the *cow-pox* in this refpect, I am happy in being able to declare, that the difeafe does not appear to have the leaft tendency to produce this destructive malady.”

\* In the *fmall-pox* the inoculated puftule is angulated, and numerous puftules furround it; in the *cow-pox*, the puftule has its edges regularly circumfcribed, and ftands folitary; the *fmall-pox* puftule contains firft a fluid, then opaque matter, the *cow-pox* puftule a gelatinous fluid, which never becomes converted into pus; the edges of the *one* is more elevated, in the *other* more deprefsed; the fcab is alfo much darker and harder in the *cow-pox*. JENNER.



## SEVENTH CONCLUSION.

*The Cow-pox may be inoculated under all circumstances.*

In our introductory remarks, when giving our reasons why the inoculation with the *small-pox* could not be made *general*, we enumerated, and explained the ground of those *exceptions*, which have been justly made against *variolous inoculation*; as, *early infancy, time of teething, humours in the body, pregnancy, and old age; the danger of spreading the natural disease, &c.*—Now NONE OF THESE OBJECTIONS apply to *vaccine inoculation*. Experience hath taught that it may be employed in all *seasons*, and under *every circumstance*, even the most *adverse* to the *small-pox inoculation*.

1. *Early infancy.*—Dr. JENNER relates, “that he caused an infant, but twenty hours old, to be inoculated for the cow-pox by his nephew HENRY JENNER; and this little stranger, so newly ushered into life, felt but a very slight disease; and, being afterwards inoculated for the small-pox, and exposed to its contagion, *resisted* all attempts to communicate the small-pox.”

2. *Time of teething.*—We may adduce here the authority of Dr. DENMAN, one of the most eminent

accoucheurs in London, in confirmation of the experience of Dr. JENNER. "It became now the duty," says Dr. DENMAN, writing in the *Physical Journal* for April 1800, "of medical men, especially of those who are much engaged in the practice of inoculating for the small-pox, or who are much consulted in *infantile diseases*, to declare their experience about vaccine inoculation, and examine into it with the greatest possible care. For my own part, I can affirm, that I have seen inoculated with the cow-pox through my son-in-law, Mr. CROFT, a great many children *at all ages*, and they went through the disease without the least sign of danger, and even without much fever or indisposition."

3. *Humours in the body, and other diseases*.—As *scrophula* does not appear to be called into action by the cow-pox (vide Sixth Conclusion, p. 133.); but, on the contrary, there are cases where this cruel disorder has been found to be not only mitigated by vaccine inoculation, but also wholly removed, the dread of the subject being *humoury* is unimportant. Fat and lean children do equally well.—In my experience at Lowther the reader will find a case of *tinia capitis*, which was not at all increased under inoculation. Dr. Pearson has recorded two cases of *psora* (itch), which, being unknown to me at the time, were inoculated; and from the pustule, which was broken, vaccine matter was conveyed to different parts of the body, producing a very severe disease, which  
appeared

appeared *pustular* solely from this cause. The *psora*, therefore, must be allowed to be a ground of exclusion to this, or any other inoculation: the only exception I am at present acquainted with.

“More than a thousand subjects,” says Mr. Dunning, surgeon at Plymouth Dock, “have been *vaccinated* in this neighbourhood during the last year. Some hundreds of them have fallen to my share. Complete success has been invariable in every case, where the vaccine character has been unequivocally expressed. With a very few exceptions, the indisposition has been none at all, or the least imaginable, and I know of no shade of accident that can fairly be attributed to the new practice. In one child a very general and obstinate cutaneous complaint, which had previously resisted much external and internal medicine, very soon *disappeared* after vaccination. *Health* and *firmness* have shortly succeeded it in several weakly children, under my own observation, and I have heard of many similar occurrences; this has so *often* and so *strikingly happened*, that it has more than once been proposed to me to vaccinate *sickly* children.”

Besides *humours* which militate against the small-pox inoculation, *there are variety of diseases*, which, if they attack at the same time the child labouring under the *small pox*, or soon after, usually prove fatal: a combination, however, not found to become aggravated by, or increase, the *cow-pox*.

“Miss R—,

“ Miss R——, a young lady about five years old, was seized, on the evening of the eighth day after inoculation with vaccine virus, with such symptoms as commonly denote the accession of violent fever. Her throat was also a little sore, and there were some uneasy sensations about the muscles of the neck. The day following a rash was perceptible on her face and neck, so much resembling the efflorescence of the *scarlatina anginosa*, that I was induced to ask whether Miss R—— had been exposed to the contagion of that disease. An answer in the affirmative, and the rapid spreading of the redness over the skin, at once relieved me from much anxiety respecting the nature of the malady, which went through its course in the ordinary way, but not without symptoms which were alarming, both to myself and Mr. Lyford, who attended with me. There was no apparent deviation in the ordinary progress of the pustule to a state of maturity, from what we see in general; yet there was a total suspension of the *areola*, or florid discolouration around it, until the *scarlatina* had retired from the constitution. As soon as the patient was freed from this disease, this appearance advanced in the usual way.”

“ The case of Miss H—— R—— is not less interesting than that of her sister above related. She was exposed to the contagion of the *scarlatina* at the same time, and sickened almost at the same hour. The symptoms continued severe about twelve hours, when the scarlatine rash shewed itself faintly



faintly upon her face, and partly upon her neck. After remaining two or three hours it suddenly disappeared, and she became perfectly free from every complaint. My surprise at this sudden transition from extreme sickness to health, in great measure ceased, when I observed that the inoculated pustule had occasioned, in this case, the common efflorescent appearance around it, and that as it approached the centre, it was nearly in an erysipelatous state. But the most remarkable part of this history is, that, on the fourth day afterwards, as the efflorescence began to die away upon the arm, and the pustule to dry up, the *scarlatina* again appeared, her throat became sore, the rash spread all over her. She went fairly through the disease, with its common symptoms."

"That these were actually cases of *scarlatina* was rendered certain by two servants in the family falling ill at the same time with the distemper, who had been exposed to the infection with the young ladies \*."

I had a similar case of scarlet fever and cow-pox in the child of Mr. White, coachman, Adams Mews. The efflorescent areola was arrested, but became visible after the scarlet fever ceased.

"I have met with," says Mr. Ring, "three cases of the co-existence of cow-pox and measles within the last six months. The first was in the child of Mr. Shepherd, in Phoenix-yard, Oxford-street. The

\* From Jenner's Inquiry.

second was the child of ——— Hardey, No. 45, Peter-street, Westminster. This case I shewed to Dr. Jenner and his friend Dr. Marshall of Gloucestershire. It was also seen by Mr. Missiter. The third case was in the child of ——— Groom, World's-end-passage, Newington-causeway."

"Mr. H. Jenner lately met with a similar case.— In these different instances, the periods of the respective eruptions were various. In the first that occurred to me, the measles appeared on the second day, and went through their regular course; yet in no degree retarded the progress of the vaccine pustule. In the second instance the measles appeared on the eighth day; and in the third instance on the fourth day; yet neither distemper interrupted the other. In the case which occurred to Mr. H. Jenner, the measles appeared the eighth day, without checking the progress of the pustule. In those cases which I have seen, the areola surrounding the pustule was perfect. This was also remarked by Dr. Jenner, in the case which I shewed him. Dr. Marshall assured me, that nothing but ocular demonstration of such a case, could have convinced him of the possibility of its existence."

"I have had," says Dr. Jenner, "an opportunity of trying the effects of the cow-pox matter on a boy who, the day preceding its insertion, sickened with the measles. The eruption of the measles, attended with cough, a little pain in the chest, and the usual symptoms accompanying that disease, appeared

peared on the third day, and spread all over him. The disease went through its course without any deviation from its usual habits; and, notwithstanding this, the cow-pox virus excited its common appearances, both on the arm and on the constitution, without any sensible interruption; on the sixth day there was a vesicle.

“ 8th. Pain in the axilla, chilly, and affected with head-ache.

“ 9th. Nearly well.

“ 12th. The pustule spread to the size of a large split pea, but without any surrounding efflorescence. It soon afterwards scabbed, and the boy recovered his general health rapidly. But it should be observed, that, before it scabbed, the efflorescence, which had suffered a temporary suspension, advanced in the usual manner.

“ Here we see a deviation from the ordinary habits of the small-pox; as it has been observed, that the presence of the measles suspends the action of variolous matter. However, the suspension of the efflorescence is worthy of observation.”

“ A case of co-existence of the cow-pox and the chicken-pox, which occurred to Mr. Little of Plymouth, is published by Mr. Dunning in his Observations on Vaccination. In that case the chicken-pox appeared on the tenth day of vaccine inoculation. The vaccine pustule was at that time arrived at its height of inflammation, and maintained its specific character.”

A most

A most remarkable case occurred to me. A girl, aged about nine, living with the Dowager the Countess of C——, fell from the balustrade of the stair-case, from the height of above 40 feet, and pitched on her skull on the stone landing-place. The fracture was extensive, and the largest piece of bone ever remembered was taken away by Mr. Heaviside, which is to be seen in his invaluable museum. A silver plate now defends the brain. This child was cautiously watched in order that she might not catch the natural small-pox; and Dr. TURTON and Mr. HEAVISIDE were justly apprehensive of inoculation. Their good sense at once, however, coincided that she should be inoculated by me with *vaccine matter*, and she passed through the disease without one day's illness, with only the slight inconvenience of the pustule on the arm.

4. *Pregnancy*.—"I have inoculated," says Dr. MARSHALL, "a great number of females at different periods of pregnancy, and never observed their cases to differ in any respect from those of my other patients. Indeed the disease is so mild, that it seems as if it might at all times be communicated with the most perfect safety\*." The same success is recorded by HENRY JENNER, who relates

\* From Jenner's Inquiry, p. 161. Second Edition.



a case, where he inoculated a person a week previous to the accouchment\*.

5. *Old age* no exception.—For confirmation of the truth of his position, I shall give the Report of the Committee of Vaccine Inoculation† at Paris, instituted by order of government.

“REPORT. The vaccine affection appears to us to be of a nature the most benign, and which hardly deserves to be called a malady; not so much as one accident occurred to the hundred and fifty subjects who have been inoculated.”

“The vaccine inoculation is no less practicable than exempt from accidents, *whatever be the age of the persons* on whom it is performed. Infants have been inoculated in the arms of their nurses; others at the age of one, two, and three years to fifteen. Persons of the age of forty, and even fifty to seventy years, have also been inoculated, and always with the same success.”

“Nineteen subjects, submitting to the operation, have been inoculated with fresh pus, taken every time from a variolous infant present. The commit-

\* Vide Jenner's Inquiry, p. 174.

† The most distinguished physicians at Paris were selected for this purpose; as,

THOURET, Director of the School of Medicine.

PINEL, Professor of Physic in the School of Medicine.

LEROUX, Clinical Professor.

PARFAIT, Inspector of the Military Hospitals, &c. &c.

tee, for the purpose of rendering the experiments more decisive, employed in many of the subjects very deep incisions, such as, according to the inoculations, necessarily occasion pustules. In fourteen the incisions were soon obliterated without any symptom of complaint. In the remaining five the effect can be considered in no other light than as the effect of local irritation, produced by the puncture of the skin."

### EIGHTH CONCLUSION.

*The inoculated Cow-pox does not hinder the patient from following his daily avocations.*

The several objections that are to be urged against the *small-pox inoculation* have no force against the *cow-pox inoculation*. These two diseases, as experience proves, are, *toto cælo*, different\*, except in

\* That this is the case is learnt from a full acquaintance with this important investigation; and to effect this, we have been obliged to say a good deal on the small-pox, and chiefly in apposition, the one being as a foil to set forth the advantages of the other.—That these are different diseases is proved from the following fact.—It is in vain you try to inoculate the cow with the *small-pox*. No brute, as John Hunter ascertained by repeated experiments, could be thus infected. But no sooner is the vaccine matter, even taken from a human subject under vaccination, inserted, than the *cow-pox* immediately succeeds, and this may be passed repeatedly from the one to the other.

the property of securing from the small-pox the person who has had either of the two. The *cow-pox* caught in the natural way proves sometimes severe from the number of inoculated places in the hands (vide note, in page 147); but the inoculated cow-pox has one pustule; hence this disease has oftener gone by the appellation of THE COW-POCK, than by the term *cow-pox*. Some writers call that the *cow-pox*, which is immediately derived from the cow; and the *cow-pock*, the inoculated disease.—Both terms have been indiscriminately used by us to express either disease, although the term *cow-pock* was adopted in the title, and in our humble estimation deserves the preference.

The inoculated cow-pox being then only a local disease, and not accompanied with a fever to confine any one to bed, hence the cause of the strong testimony of the brave commander of the *Endymion*, on board which ship Dr. Marshall was, who declared, “that he would not fear to meet the enemy, with his whole crew, under vaccine inoculation.”

4. Dr. JENNER *establishes with the method of inoculation, the medical treatment when required.*

The mode of inoculation, as done by Dr. JENNER, is extremely simple. The lancet being held upright is made to puncture the pustule on the sixth, seventh, or eighth day. Soon there issues a globule of the aqueous cow-pock fluid, which keeps rising

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on

on the surface gradually. The point of the lancet held nearly horizontal is immersed in this fluid, and in the same direction, without raising blood, inserted between the cutis and the cutis vera, the two skins, and the lancet being withdrawn is wiped over the inoculated part \*.

The cow-pock being a local disease, usually without much constitutional affection, and this fever being the product of the local irritation produced †, there

\* As the fluid of the *cow-pox* is a less active matter than that of the *small-pox*, this inoculation is very apt to fail; and to perform the insertion of the vaccine matter in that delicate manner I have witnessed Dr. Jenner do it, requires both attention and practice. Children are also made with difficulty to remain quiet; and if blood is fetched, as it flows it is apt to carry out the inserted virus. As a less frightful instrument of inoculation, and as producing the desired effect with more certainty, I employ for children a common pin of a moderate size, and twirling it round horizontally, it penetrates without pain the two skins, even to some extent, and when drawn out leaves an opening devoid of blood. The pin being struck with a hammer, and immersed in the cow-pock fluid, is then introduced into the same aperture, and the matter is with ease lodged in the hollow. The cow-pock fluid is also deposited at the orifice, and thus the inoculation is secured, without exciting the least alarm. A moderate-sized needle will serve equally the same purpose.

† As the cases of inoculation multiply, I am more and more convinced of the extreme mildness of the symptoms arising merely from the primary action of the virus on the constitution, and that those symptoms which (as in the accidental cow pox) affect the patient with severity, are entirely secondary, excited by the irritating processes of inflammation and



there is seldom required any medical attention, and that only as far as regards the pustule.

“In the early part of this inquiry,” says Dr. JENNER, “I felt far more anxious respecting the inflammation of the inoculated arm than at present; yet that this affection will go on to a greater extent than could be wished, is a circumstance sometimes to be expected. As this can be *checked*, or even *entirely subdued* by very simple means, I see no reason why the patient should feel an uneasy moment, and in general an application may not be absolutely necessary. About the tenth or eleventh day, if the pustule has proceeded regularly, the appearance of the arm will almost to a certainty indicate whether this is to be expected or not. Should it happen, no-

and ulceration; and it appears to me that this singular virus possesses an irritating quality of a peculiar kind; but as a single cow-pox pustule is all that is necessary to render the variolous virus ineffectual, and as we possess the means of allaying the irritation, should any arise, it becomes of little or no consequence.

It appears then (as far as inference can be drawn from the present progress of cow-pox inoculation) that it is an accidental circumstance only which can render this a *violent* disease, and a circumstance of that nature, which fortunately it is in the power of almost every one to avoid. I allude to the communication of the disease from cows. In this case, should the hands of the milker be affected with little accidental sores to any extent, every sore would become the *nidus* of infection, and feel the influence of the virus; and the degree of violence in the constitutional symptoms would be in proportion to the number and to the state of these local affections. JENNER.

thing more need be done than to apply a single drop of the *Aqua Lythargyr. Acetati* upon the pustule, and having suffered it to remain two or three minutes, to cover the efflorescence surrounding the pustule with a piece of linen dipped in the *Aqua Lythargyr. Compos.* The former may be repeated twice or thrice during the day; the latter as often as it may feel agreeable to the patient."

"When the scab is prematurely rubbed off, (a circumstance not unfrequent among children and working people,) the application of a little *Aqua Lythargyri Acet.* to the part, immediately coagulates the surface, which supplies its place, and prevents a fore."

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"The *scepticism*," says Dr. JENNER, "that appeared even among the most enlightened of medical men, when my sentiments on the important subject of the cow-pox were first promulgated, was highly *laudable*\*. To have admitted the truth of a doctrine, at once so novel and so unlike any thing that had ever appeared in the annals of medicine,

\* How remarkable this moderation! May we not now call *supineness* and *medical scepticism* a base dereliction of our duty, a crime against the state, and against humanity?

without

without the test of the most rigid scrutiny, would have bordered upon temerity; but now, when that scrutiny has taken place, not only among ourselves, but in the first professional circles in Europe, and when it has been uniformly found in such abundant instances, that the human frame, when once it has felt the influence of the genuine cow-pox in the way that has been described, is never afterwards, at any period of its existence, assailable by the small pox, may I not with perfect confidence congratulate my country and society at large on their beholding, in the mild form of the cow-pox, an antidote that is capable of extirpating from the earth a disease which is every hour devouring its victims; a disease that has ever been considered as the severest scourge of the human race!"

Well may this great and philanthropic physician exclaim—

Jamque opus exegi, quod nec Jovis ira, nec ignis,  
Nec poterit ferrum, nec edax abolere vetustas.  
Cum volet illa dies, quæ nil nisi corporis hujus  
Jus habet, incerti spatium mihi finiat ævi:  
Parte tamen meliore mei super alta perennis  
Astra ferar, nomenque erit indelebile nostrum.

We now hasten to a *confirmation* of *these discoveries*, by adducing the most respectable corroborating testimonies, and my own experience, especially those decisive experiments I made at Lowther in the North of England, when under the roof of the Earl of LONSDALE.

## SECT. X.

## THE EXPERIENCE OF HENRY JENNER, SURGEON.

There is not, perhaps, in the annals of medicine, to be found, an example of an experiment, or rather inquiry, where the life and health of such numbers already born, and of all to be born, were implicated, that has been taken up *more generally*, received *more candidly*, or conducted *more prudently*, than this concerning the COW-POX.

From Dr. Bradley's Medical Journal.

“ I TRUST,” says this able vindicator of the discoveries of his uncle, “ that the importance of the subject will be a sufficient apology for making this (I hope my final) appeal to the candour and good sense of the public. Confident of the strength of the foundation on which I stand, I fear not the blasts of baseless detraction. Conscious of no motives which an honest and a feeling mind would blush to avow, I would wish seriously to impress the *importance* of VACCINE INOCULATION.

“ I shall commence, according to the mode adopted by Dr. JENNER, by fairly stating, in the way of comparison, the peculiar differences which mark the small-pox and cow-pox; at the same time premising, that I can with the utmost confidence affirm, that the statement is in every particular confirmed by very extensive experience.”



## SMALL POX.

1. VERY frequently calls *latent diseases into action*; in these are included the various species of *scrofula*.

2. Is *contagious* and communicable by effluvia.

3. Cannot be communicated with safety to *children* when *cutting teeth*.

4. In sickening with the small-pox, children are *frequently* afflicted with *alarming fits*; and when their constitutions are delicate, they *suffer materially in their health during life*.

5. Is oftentimes *fatal*.

6. Is attended with eruptions, and very often *disfigures* the countenance.

## COW-POX.

WE may safely conclude, from a long and careful observation of this disease, as communicated from the cow, and from no limited experience in its inoculation, that it excites no disposition to other complaints. It is a pure disease, proceeding from the healthiest and the most cleanly of all animals, the heifer.—Nor is that animal ever subject to *scrofula*.

Numerous experiments testify, that this never happens in the cow-pox.

This circumstance forms no objection to inoculate with vaccine matter.—Numerous experiments justify the assertion.

Nothing of this kind has ever appeared in this disease; and the constitutions of children have been improved by its communication.

No instance of the kind has ever occurred.

In this disease (even in the natural way) I never observed any pustules.

## SMALL-POX.

7. Persons afflicted with this disease cannot mingle with those who have never been affected by it.

8. *Medicines* are necessary to be administered.

9. Notwithstanding the present improved state of inoculation, parents and friends must feel a considerable degree of *anxiety* for the safety of relatives, &c.

10. Requires often a *nurse*.

## COW-POX.

This objection does not apply to the cow-pox, as it is neither contagious, nor communicable by effluvia.

Here no medicines are required.

Little anxiety can be felt in this disorder, as it is never attended with the least danger.

This disease does not.

“ The above comparison of the advantages which are to be derived from the substitution of the *vaccine disease* for the *small-pox*, is founded upon principles which experience has proved to be fixed upon the solid basis of truth. I am certainly entitled to speak with confidence on the subject; as, in conjunction with my uncle, Dr. JENNER (who, with indefatigable industry, has completely investigated the nature of the cow-pox), I have had a very extensive acquaintance in this part, of medical practice; but *prejudice* and *illiberality* will ever be on the watch to stop the progress of improvement, and to overturn the edifice of well-earned fame. The history of the advancement of science exhibits this truth in every page; but the same detail will inform us that succeeding ages have never failed

failed to place in its proper nook, in the temple of renown, the discoverer of any thing beneficial to human kind. Ignorant as we are what place may be consigned to Dr. JENNER by the *present age*, he may confidently appeal, by the justice of his claims, to an unprejudiced, impartial *posterity*."

The author concludes this able pamphlet \* as follows: "Were it necessary, I could produce volumes of evidence and clouds of witnesses to prove the truth of the facts which I have adduced concerning the cow-pox and small-pox. I could refer the public to medical gentlemen of the first charac-

\* Vide a pamphlet, entitled, "*An Address to the Public on the Advantages of Vaccine Inoculation, with the Objections to it refuted*;" by HENRY JENNER, Surgeon, F.L.S. This distinguished surgeon, who practises at Berkeley in Gloucestershire, might be supposed to be influenced by partiality in favour of his uncle's discovery, and his evidence would of course be admitted by many with some caution; but, when we consider the respectability of the parties, and their education, and the certainty of their sentiments meeting with a minute examination, the evidence must then be allowed its due weight. Mr. JENNER has much merit in the able concentration he has made of the comparative advantages of the two diseases, and has successfully proved, by the most certain characters, that all the cases published in the different magazines and newspapers in opposition to his uncle's facts, were examples of *spurious cow pox*; which, instead of making against *the fact*, only shewed the *ignorance* on the subject of the publishers, who appear to have been wholly unacquainted with *the causes*, and those *signs of discrimination* of the true and *spurious cow-pox* pointed out by Dr. JENNER in his works.

ter and highest eminence in their profession, who would corroborate my assertions respecting the *peculiar* properties of the *vaccine disease*. But, waving this for the present, I cannot avoid observing that I should consider myself as the grand enemy of society if I were to recommend the general introduction of a practice, if experience, the test of theory, and the only sure guide of conduct, did not fully warrant its *bighest commendation*. Nay, in what light should I consider myself as a professional man, and I trust an honest member of society, if I were to enforce a practice which involves in itself the dearest interests of society; which comprehends in its influence the healths and *lives* of my fellow creatures; if I were not assured of its *inevitable safety*, and its *numerous advantages*."

"These advantages will doubtless be embraced by the serious and reflecting. The mind of feeling, anxious for the health and safety of relatives and friends, will pause and consider before the *small-pox* be admitted, while *so mild* and *so efficacious a substitute* is offered. The imminent danger, the disfigured skin, the subsequent scrofula of the one will be contrasted with the unmarked countenance and perfect safety of the other. But, if *prejudice* should still continue to operate on the general mind, I am confident a time will come when those who have neglected to take advantage of the present opportunity will lament their conduct, and possibly lament it with unavailing sorrow, for sorrow must be



be unavailable for breathless friends: nor can "flattery sooth the dull cold ear of death."

Conscious as I equally am of the *purity of my intentions*, and of the *truth of my assertions*, I leave these remarks with the candid judgment of the public."

" ——— 'Tis EVIDENCE \* so full—

If the last trumpet sounded in my ear,  
Undaunted I should meet the saints half way,  
And in the face of Heav'n maintain the fact."

DRYDEN.

\* His brother, the Rev. Mr. JENNER, who has been not less engaged in the vaccine inoculation, had he favoured the public with his sentiments, instead of quoting from a poet, would have given us this text from heavenly writ: "If they believe not Moses and the prophets, neither would they believe though one rose from the dead."

SECT.

## SECT. XI.

DR. MARSHALL'S EXPERIENCE \*.

*First Letter to Dr. Jenner.*

“ DEAR SIR,

“ MY neighbour, Mr. Hicks, having mentioned your wish to be informed of the progress of the inoculation here for the cow-pox, and he also having taken the trouble to transmit to you my minutes of the cases which have fallen under my care, I hope you will pardon the further trouble I now give you

\* Dr. MARSHALL has been indefatigable in the important investigation of the Cow-pox. When *great truths* are brought forward, they cannot fail to rouse the active powers of men; and hence we find this physician, accompanied by Dr. WALKER, who was inspired with an equal zeal, leaving the comforts of home, and an extensive business, to communicate the benefits of *Vaccine Inoculation* to other parts of the habitable globe. They accordingly set out in July 1800, for the glorious purpose of inoculating, under a burning sun, (which they accomplished with the happiest events,) the *soldiers* and *sailors* contending for us gentlemen at ease; securing them ever after from an enemy which no bravery can surmount, the natural small-pox, whose fatality is truly dreadful

you in stating the observations I have made upon the subject."

"When first informed of it, having two children who had not had the small pox, I determined to inoculate them for the *cow pox* whenever I should be so fortunate as to procure matter proper for the

ful when it assails an encamped army, or a number of sailors, cooped up, from necessity, in a rocking cabin.

Dr. MARSHALL was kindly received at Gibraltar, by General O'Hara, who set the example to the garrison, by having first his own son inoculated;—from thence he went to *Minorca*, and returning, was conveyed by Admiral Lord Keith to *Malta*, where the governor, Sir Alexander Ball, established an hospital for the gratuitous inoculation of the inhabitants under the name of the JENNERIAN INSTITUTION. From *Malta* this indefatigable philanthropist sailed to *Sicily*, and reached *Palermo* in March 1802, where the King of *Sicily* and *Sardinia* immediately established an institution similar to the one mentioned above, under the same title. Arriving at *Naples*, the same institution for gratuitous vaccine inoculation was established there, and surgeons were desired to bring children from every quarter of the Island, and returning in every direction, the rich treasure being contained in the pustule, vaccine inoculation was diffused like the rays of the sun, and thus extended its benign influence to every quarter; and each inoculation being the focus of a lesser circle, the rapidity of the inoculation of the island of *Sicily* was amazing, and in a few weeks reached to the remotest corners. Previous to Dr. MARSHALL's leaving *Sicily* to return to England, after two years devoted to this service of benevolence, his SICILIAN MAJESTY presented him with an elegant gold medal, and appointed him his physician extraordinary.

purpose.

purpose. I was therefore particularly happy when I was informed that I could procure matter from some of those whom you had inoculated."

"In the first instance, I had no intention of extending the disease further than my own *family*; but the very extensive influence which the conviction of its efficacy in resisting the small-pox has had upon the minds of the people in general, has rendered that intention *nugatory*, as you will perceive by the continuation of my cases inclosed in this letter, the detail of which would be superfluous; by which it will appear, that since the 22d of March I have inoculated *an hundred and seven* persons; which, considering the retired situation I reside in, is a very great number."

"There are also other considerations which, besides that of its influence in resisting the small-pox, appear to have had their weight; namely, the peculiar mildness of the disease, the known safety of it, and its not having in any instance prevented the patient from following his ordinary business."

"In all the cases under my care, there have only occurred two or three which required any application, owing to erysipelatous inflammation on the arm, and they immediately yielded to it. In the remainder the constitutional illness has been slight, but sufficiently marked, and considerably less than I ever observed in the same number inoculated with the small-pox."

"Neither



“ Neither does there appear in the cow-pox to be the least exciting cause to any other disease, which in the small-pox has been frequently observed; the constitution remaining in as full health and vigour after the termination of the disease as before the infection.”

“ Another important consideration appears to be, the impossibility of the disease being communicated, except by the actual contact of the matter of the pustule; and consequently the perfect safety of the remaining part of the family, supposing only one or two should wish to be inoculated at the same time.”

“ Upon the whole, it appears evident to me, the Cow-pox is a *pleasanter, shorter, and infinitely more safe disease* than the *inoculated small-pox*, when conducted in the most careful and approved manner; neither is the local affection of the inoculated part, or the constitutional illness, near so violent. I speak with confidence on the subject, having had an opportunity of observing its effects upon a variety of constitutions, from *three months old* to *sixty years*; and to which I have paid particular attention.”

“ In the cases alluded to here you will observe, that the removal from the original source of the matter has made no alteration or change in the nature or appearance of the disease, and that it may be continued, *ad infinitum*, (I imagine,) from one  
 I person

person to another, (if care be observed in taking the matter at a *proper period*,) without any necessity of recurring to the original matter of the cow."

"I should be happy if any endeavours of mine could tend further to elucidate the subject, and shall be much gratified in sending you any further observations I may be enabled to make."

"I have the pleasure to subscribe myself,

"Dear Sir, &c.

Effington, Gloucestershire, "JOSEPH H. MARSHALL."  
April 26th, 1799.

"The gentleman who favoured me with the above account," says Dr. JENNER, "has continued to prosecute his inquiries with unremitting industry, and has communicated the result in another letter, which, at his request, I lay before the public."

*Dr. Marshall's Second Letter.*

"DEAR SIR,

"Since the date of my former letter, I have continued to inoculate with the cow-pox virus. Including the cases before enumerated, the number now amounts to *four hundred and twenty-three*. It  
would

would be tedious and useless to detail the progress of the disease in each individual—it is sufficient to observe, that I noticed no deviation in any respect from the cases I formerly adduced.”

“The general appearances of the arm exactly corresponded with the account given in your first publication.”

“When they were disposed to become troublesome by erysipelatous inflammation, an application of equal parts of vinegar and water always answered the desired intention.”

“I have already subjected *two hundred and eleven* of my patients to the action of variolous matter, *but every one resisted it.*”

“The result of my experiments (which were made with every requisite caution) has fully convinced me *that the true Cow-pox is a safe and infallible preventive from the small-pox; that in no case which has fallen under my observation has it been in any considerable degree troublesome, much less have I seen any thing like danger; for in no instance were the patients prevented from following their ordinary employments.*”

“I cannot now entertain a doubt that the *inoculated cow-pox* must quickly supersede that of the *small-pox.*”

“If the many important advantages which must result from the new practice are duly considered, we may reasonably infer that public benefit, the sure test of the real merit of discoveries, will render it *generally extensive.*”

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“To

“ To you, Sir, as the *discoverer* of this highly beneficial practice, mankind are under the highest obligations. As a private individual, I participate in the general feeling; more particularly as you have afforded me an opportunity of noticing the effects of a singular disease, and of viewing the progress of the most curious experiment that ever was recorded in the history of physic.

“ I remain, Dear Sir, &c.

“ JOSEPH H. MARSHALL.

“ P. S. I should have observed, that of the patients I inoculated and enumerated in my letter, one hundred and twenty-seven were inoculated with the matter you sent me from the London cow. I discovered no dissimilarity of symptoms in these cases, from those which I inoculated from matter procured in this county.”

“ No pustules have occurred, except in one or two cases, where a single one appeared on the inoculated arm.”

“ No difference was apparent in the local inflammation.”

“ There was no suspension of ordinary employment among the labouring people, nor was any medicine required.”

“ I have frequently inoculated one or two in a family, and the remaining part of it some weeks afterwards.



afterwards. The uninfected have slept with the infected during the whole course of the disease without feeling it; so that I am fully convinced the disease cannot be taken but by actual contact with the matter."

"I had nearly omitted mentioning another great advantage that now occurs to me in the inoculated cow-pox; I mean the safety with which pregnant women may have the disease communicated to them. I have inoculated a great number of females in that situation, and never observed their cases to differ in any respect from those of my other patients."

Indeed the disease is so mild, that it seems as if it might at all times be communicated with the most perfect safety."

## SECT. XII.

## DR. WOODVILLE'S EXPERIENCE.

NEXT in time and highest in rank comes the experience of Dr. WOODVILLE.—It was not to be expected that the physician of the small-pox hospital would be an inactive spectator of the great scenes that were performing; accordingly we find the learned and sagacious Dr. Woodville early turning his thoughts to the important revolution about to be established, and the small-pox hospital was converted into a place of experimental inquiry, and it brought to light some hidden properties in the cow-pox wholly unexpected.

In the two first cases, those of MARY and ELIZABETH PAYNE, “there was only the *inoculated pock*, and no eruption. The disease took its usual progress, and terminated favourably.”

“These children were after this inoculated plentifully with small-pox matter, *but without its producing the disease.*”

“They were also brought to the bedside of a person labouring under a severe natural small-pox, and handled and kissed by the patient, *but both were found to be secure from the infection of the small-pox.*”

In the third case, on the 7th day, in the evening; Dr. WOODVILLE observed "two pustules \* appear exactly

\* Vide "*Reports of a series of inoculations for the variolæ vaccinae, or cow-pox, with remarks and observations on this disease, considered as a substitute for the small-pox by WILLIAM WOODVILLE, M. D. Physician to the Small-pox Hospital.*"—The authority of Dr. Woodville being the highest possible; and his work, which was eagerly read by all ranks of people, the result of a learned candid ingenuous mind; although a faithful transcript of *facts*; it gave some check to the progress of *vaccine inoculation*: for it was suspected that these eruptive examples *reported* were real cases of cow-pox; and Dr. Jenner's assertion "of its being always a disease of a *single pustule*, where the matter was inserted, and never accompanied, like the small-pox, with a crop of engendered pustules," was for a time called in question, until Dr. JENNER took up the pen, and attributed with all the temper imaginable this difference of opinion to a contamination of the cow-pox matter with the small-pox virus, producing in consequence an *hybrid disease*.—This produced an answer from Dr. Woodville with the following very extraordinary dedication.

TO EDWARD JENNER, M. D. F. R. S. F. L. S. &c.

"Sir,

"That the vaccine matter, with which the inoculations have been carried on in the hospital, was contaminated with that of the variolous, and that a *hybrid* disease has in consequence been propagated, not only by me, but also by others, who have been supplied with that matter, is a *charge* which I know to be *unfounded*, and which it is my duty to refute."

"The performance of this task has, however, been very painful to me, from being unable to avoid a certain de-

exactly resembling the small-pox, on the 11th day there were nine, on the 13th nine others, on the 14th six more, making in all twenty-four."

From

gree of *recrimination*, which attaches to a *man*, for whom I have long entertained a friendly regard, and to whom the public is under the great obligation by having been made acquainted with a discovery which promises the most important benefits to society.

" I am,

" Sir,

" Your obedient servant,

" W. WOODVILLE."

Ely-Place, July 1st, 1800.

" I feel myself," says Dr. WOODVILLE, " impelled to address the public a second time on the subject of the inoculation for the cow-pock, not only because an enlarged experience of it has now enabled me to produce more decisive evidence of its *advantages*, but because some remarks upon my practice of this new inoculation have lately been made, which call upon me for an immediate reply."

" I trust it will be generally acknowledged, that the observations and opinions formerly adduced by me on this subject, are strictly impartial and unprejudiced; also, that the facts on which they are founded, have been related without the least reserve, and with the most scrupulous fidelity: notwithstanding, my conclusions in respect to a point of considerable importance have been opposed in a manner which I deem wholly *unwarrantable*. I allude to the pustular eruptions which appeared on more than half the patients first inoculated for the cow-pock, under my direction; Dr. Jenner, in a late publication, having maintained that those pustules could *only* proceed



From a great many trials of vaccine inoculation in this place, before wholly dedicated to the small-

ceed from variolous matter, introduced by inoculation into the constitution along with that of the vaccine. That objections would be made to this effect might be foreseen, and they were accordingly anticipated in my *reports*, where several facts and arguments are brought forward to prove, that all the cases which I had represented as cases of cow-pox, were produced from the inoculation of the matter of that disease, uncontaminated with any other. Having done this in a manner which has generally been deemed satisfactory, I did not now expect that any gentleman would publicly attempt to subvert my conclusion, without first doing me the justice to show, that the reasons on which it was founded were defective or fallacious. Although I have been disappointed in this expectation, yet as I have no other object in view than a discovery of the truth, I will fully state all the reasons which the ingenious inventor of the new inoculation has advanced in support of a contrary opinion. He first enters upon the consideration of *pustules* at page 7, where he says, ‘ When I consider the great number of cases of casual inoculation immediately from cows, which have from time to time presented themselves to my observation, and the many similar instances which have been communicated to me by medical gentlemen in this neighbourhood ; when I consider too, that the matter with which my inoculations were conducted in the years 1797, 1798, 1799, was taken from different cows, and that in no instance any thing like a variolous pustule appeared ; I cannot feel disposed to imagine that eruptions, similar to those described by Dr. Woodville, have ever been produced by the *pure uncontaminated cow-pox virus* : on the contrary, I do suppose, that those which the Doctor speaks of *originated* in the action of variolous matter which crept into the constitution with the vaccine: and this, I *presume*, happened from the inoculation of a great number of the patients with a variolous matter,

pox, it turned out, that the vaccinated patients became also infected with the contagion of the small-pox; and hence the appearance of both diseases at the same time on the same person. For example :

“About two months ago,” says Dr. WOODVILLE, “a girl, eleven years of age, was admitted into the inoculation hospital, where she was inoculated with vaccine matter. Five days afterwards she was seized with all the symptoms of small-pox, and an eruption of pustules (about 200) took place. On the 10th day of the inoculation, one of the variolous pustules appeared distinctly within the margin of the vaccine tumour. I charged a lancet with matter taken from the centre of the tumour, and with it inoculated a child in whom it produced a regular case of cow-pock. Mr. Wachsel, the apothecary to the hospital, who inoculated three children with matter taken from the pustule in the vaccine humour, found that it communicated the cow-pox to all of them.”

The discovery which this led to, as alluded to above, was, that, although the inoculated cow-pox did not supersede the small-pox, yet the latter was

(some on the third, others on the fifth day,) after the vaccine had been applied; and it should be observed, that the matter thus propagated became the source of future inoculations in the hands of many medical gentlemen, who appear to have been previously unacquainted with the nature of the real genuine cow-pox.” “NON NOSTRUM INTER VOS TANTAS COMPOSERE LITES.”

rendered,

rendered, although taken in the natural way, even more mild than the inoculated small-pox usually turns out, and the *pustular* cases *diminishing*, at length *wholly disappeared*, and the *cow-pox* reared its TRIUMPHANT STANDARD in the house consecrated to the *small-pox*, and now reigns there alone.

Dr. WOODVILLE's *public report is*

"It was not to be expected that a disease originating in brutes should be recommended as a substitute for the small-pox, and for this purpose be transferred to the human race, without exciting much obloquy and opposition: indeed, several of the most valuable discoveries in medicine have met with a similar reception; among these may be included inoculation of the small-pox, against which the clamour became so considerable, that it fell into disuse for several years. To regulate the disputes which the introduction of that practice into this country occasioned, and to direct the controversy to the true points at issue, Dr. JURIN, then secretary to the Royal Society, judiciously stated, that the fate of inoculation depended upon the decision of the two following questions:"

"*First*, 'Whether the distemper, given by inoculation, be an *effectual security* to the patient against his having the small-pox afterwards in the natural way?'

"*Secondly*, 'Whether the *hazard* of the inoculation

tion be considerably *less* than that of the natural small-pox?"

"The application of these remarks to our inquiries into the merits of the vaccine, compared with those of the variolous, inoculation, is too obvious to require being pointed out. Now, if by distemper in the first query we understand that of the cow-pox, and if in the second we add new immediately before inoculation, and substitute inoculated for natural, I would answer both questions in the affirmative, presuming that the facts already brought forward on the subject clearly decide the cow-pox inoculation to be *preferable* to that of the small-pox."

"An opinion has been propagated, and with several persons has had considerable influence, that the power of resisting the infection of the small-pox, which the constitution derives from the vaccine disease, will continue only for a few years: but this is mere conjecture, contradicted by facts of casual cases of cow-pox, and contrary to analogy."

"In regard to the comparative mildness of the vaccine and variolous diseases, as produced from inoculation, I have been enabled to give a very different report from that which I published last year. The reason why several of the cow-pox cases then at the hospital proved severe, like those of the inoculated small-pox, has already been sufficiently explained, and will, I trust, have the effect of placing the cow-pock inoculation in a more advantageous



tageous point of view than my former *reports* presented."

"I have before observed, that of the last 2000 cases of cow-pox under my care, not a single alarming symptom was excited; and I may now add, that during the last eight months I have not met with one instance of the vaccine disease, which has not been as favourable as the mildest cases of variolous inoculation. I have no doubt, therefore, that the inoculated cow-pox is *as much milder* than the inoculated small-pox, as the latter disease is milder than the casual small-pox: nay, it seems to me from the very benign form in which the vaccine pock has of late invariably appeared, that it may be considered as a disease perfectly *harmless* in its effects.—Indeed, upon this consideration, several persons have been persuaded to have their children inoculated for the disease, although they were very doubtful of the reality of its antivariolous power: for, if it proved a security to the children against the infection of the small-pox, the object would be attained by the safest means: if it did not, no harm would arise from the experiment, since it was tried merely as a preliminary expedient to the inoculation for the small-pox. The result, however, has constantly furnished additional evidence in favour of the new inoculation, and of course has tended greatly to promote the adoption of it in London."

"Another considerable consideration, highly important to the community is, that as the cow-pox,  
unless

unless from the adventitious circumstances before-mentioned, very rarely, *if ever*, appears with variolous-like pustules, it would seem incapable of propagating itself by effluvia. Hence by the substitution of the vaccine for the variolous inoculation, the casual spreading of the small-pox from the inoculated, a circumstance which has greatly contributed to swell the bills of mortality for the metropolis, and of which the public has *long justly complained*, is completely avoided. Nor is it unreasonable to conclude, that if the new inoculation were to be *universally* adopted, the variolous disease, in process of time, may be *wholly extinguished*."

The French nation, then at war with this country, could not but behold this great discovery with an eye of astonishment, and became eager to ascertain the fact, and participate in the blessing.

Dr. WOODVILLE was accordingly induced to visit France for this express purpose. Our Government on that occasion shewed it carried on war not with a spirit of mortal animosity, but with that high honour "which makes ambition virtue;" a passport was granted, and he arrived in France as a GUARDIAN ANGEL come to stay the pestilence.

He began the vaccine inoculation upon three children at Boulogne, where he first landed on his way to Paris, and placed them under the care of Dr. Nowell, an English physician, who was desired to send vaccine matter upon lancets to Paris, as soon

as

as the arms of those children produced a sufficient quantity for the purpose. This precaution proved to be very fortunate; for, five days afterwards, when the matter of the same pox was tried at Paris, it produced no effect whatever; and the cow-pox, which Dr. Thouret had received from Geneva, and which had not been longer than four or five days upon the thread, was found to be equally incapable of producing the disease.

The disappointment from the above trials was not, however, of long continuance. The inoculation at Boulogne succeeded; and from them Dr. WOODVILLE was supplied with matter at Paris, which fully answered his expectation. Dr. COLON's only child was the first person inoculated in this city; and other medical men, in order to testify the confidence they placed in the new inoculation, followed the example; so that Dr. Woodville had the satisfaction to see the practice extended, not only amongst the children in different hospitals, but also in private families in Paris, where, no doubt, it will soon become general\*.

The

\* For an account of the progress of vaccine inoculation in France, and I may add throughout the habitable globe, vide the elaborate work of Mr. RING, entitled, "*A Treatise on the Cow-pox, or History of Vaccine Inoculation.*" I shall, therefore, just inform my readers, and in the way of note, as my work is intended as a popular production, only comprehending the most prominent facts respecting vaccine

The number inoculated by Dr. Woodville at the present time amounts to upwards of 7000 persons, and out of these more than 3000 have been inoculated with the small-pox matter; and a considerable number exposed to the contagion of the small-pox; but in every instance they have *resisted* the small-pox, being rendered by the cow-pox insusceptible of its influence.

cine inoculation, and its early domestic triumphs, that not long after the arrival of Woodville at Paris, Dr. COLON prepared for the press, and published a pamphlet on the cow-pox.

“First, having pointed out the advantages of vaccine inoculation, Dr. Colon proceeds to answer the different objections urged against the practice. It is the lot, says he, of all useful discoveries, to have to combat, at their commencement, all that the spirit of *party*, or of *interest*, can invent, to arrest their progress. He observes, that the vaccine experiments were scarcely commenced, when certain persons raised an outcry, about the danger of introducing into the human body matter taken from a brute. These apprehensions, too violent and premature, as Dr. Colon remarks, to be sincere, were spread with great industry. They are not, however, confirmed by experience; for our author tells us, he himself has inoculated above a hundred children with the cow-pox; of whom not one had any serious indisposition. It is proved, in a satisfactory manner, by the experience of Dr. Colon, and since by all the other practitioners in France, that the vaccine virus does not degenerate, by repeated transmissions, in the human subject. The learned author refutes the absurd arguments advanced against this practice. He contends, that it ought to be adopted as a substitute for the small-pox; which is so highly dangerous to pregnant women, and children in a state of dentition; and that every partial inoculation of the

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small-



small-pox, in a populous neighbourhood, becomes a new focus of infection. Dr. Colon informs us, that before he had absolute proofs of the benefit of this new method, he had formed an establishment for the inoculation of the cow-pox, at his house at Vaugirard ; but now, since it is proved to demonstration that it is so innoxious both to the individuals who are subjected to the operation, and to the public, he is returned to Paris, in order to inoculate at their own houses all those who put themselves under his care. Such is the report of the success of vaccine inoculation, presented to the world by an eminent physician of one of the most enlightened nations in Europe. If any thing can add to the well-deserved fame which this inestimable practice has already acquired, this transplanting must ensure its triumph, and complete its glory." RING.

## SECT. XIII.

## DR. PEARSON'S EXPERIENCE.

It also could not be expected that the active mind of the learned Dr. PEARSON would be unengaged by the grand revolution now so publicly announced; accordingly we find this able physician, next in time to Dr. Woodville, took up the inquiry; and, besides the accession of fresh information \* on the subject, corroborating the discoveries of Dr. Jenner, he established a PUBLIC INSTITUTION, for the cow-pock inoculation, under the patronage of His Royal Highness the Duke of YORK, conceiving it the best plan imaginable to spread information among such as were unacquainted with this practice; for determining all doubtful points relative to it; and for discovering the cause of failures if such existed; since every case was to be registered, and every new trial to be made under the medical establishment belonging to that institution; and the results of the practice to be reported to the governors who were both numerous and respectable, paying a small sum annually to the institution. A far-

\* Vide note \*, page 92.

ther considerable public benefit arose from a stock of vaccine matter being always ready for the public use.

#### THE REPORT WITH DIRECTIONS.

“ 1. The vaccine pock matter being generally, when first taken from the vesicle, a thin limpid fluid, it becomes, when dried, scarcely visible, either on *glass*, or on the end of a *lancet*, even on a quite new one. If the matter be taken on thread, it will be perceived by the stiffness of it when dried.”

“ 2. If the matter is not used immediately on its being taken from the vaccine pock, it will of course be *dry* ; and when employed, it should be softened by the smallest particle of hot water ; and to avoid too great dilution, that should be done by a particle of hot water hanging on the extremity of a needle.”

“ 3. The inoculation must be performed in the same manner as for the small-pox ; but it may be useful to recommend, that,

“ 4. Matter may be inserted in one place only in each arm, by a very small scratch or puncture of the skin.”

“ 5. One armed lancet should be used for only one, or at most two punctures.”

M

“ 6. If

“ 6. If the infection take, there will be seen in the inoculated part, in *four* days, or less, a red spot, like a small gnat-bite.—In *six* days there will be generally a very small vesicle.—In *nine* days, a circular vesicle appears, as large as a pea, often surrounded by a small red areola.—In *twelve* days, the red areola will generally surround the vesicle, which then begins to dry, and turn black in the middle.”

“ Between the *eighth* and *eleventh* day, a slight fever often takes place.”

“ By the *fourteenth* day, the vesicle is usually changed into a circular dark brown scab, which should by no means be removed, but left to fall off, which it will do in two or three weeks, leaving a pit.”

“ If in four days the *gnat-bite* appearance be not manifest, the inoculation should be repeated.”

“ 7. Of above four thousand persons who have had the inoculated cow-pock, not one has died.”

“ 8. Not a single well-attested instance has been produced, among more than 4000 of the above persons known to have had the inoculated vaccine-pock, and who were subsequently inoculated for the small-pox, of this disease being subsequently taken; although many of these were also exposed to the infectious effluvia of the natural small-pox: and traditionally, this fact has been established time immemorial, with regard to the casual cow-pock.”

“ 9. It



"9. It may now safely be affirmed, that the inoculated cow-pock is generally a *much slighter* disease than the inoculated small-pox; and that the proportion of severe cases in the latter is to the former at least ten to one."

"10. It does not appear that the genuine vaccine inoculation can be propagated like the small-pox, by effluvia from persons labouring under it. Hence, if the vaccine inoculation should be *universally* instituted in place of the small-pox, it is reasonable to conclude, that this most loathsome and fatal malady will be eradicated; and, like the sweating sickness, plague, certain kinds of leprosy, &c. be known in this country only by name."

"11. It does not appear that the vaccine virus, like that of the small-pox, can be conveyed so as to produce the disease indirectly from diseased persons, by adhering to clothes, furniture, bedding, letters, &c. Hence no danger of its propagation in these channels is to be apprehended from the *universal* practice of the inoculation of the cow-pock."

"12. It has been found that a person, whose constitution has distinctly undergone the vaccine disease, is in future unsusceptible of the same disorder. Hence no objection can be made to the new inoculation, as was once urged, on account of its being imagined that, by the commutation of the small-pox for the vaccine pock, "an eruptive disease would be introduced, to which the same person would be repeatedly liable."

“ 13. It does not appear that those who have already gone through the small-pox are susceptible of the vaccine disease, as was formerly thought \*. Hence no objection can be urged on the score of persons who have already gone through the small-pox being liable to a new infectious disease, by the introduction of the vaccine inoculation.”

“ 14. Experience shews, that there is no reason to apprehend the smallest chance of deformities of the skin from the vaccine inoculation.”

“ 15. The extensive practice of the vaccine inoculation in the present year, and the accounts of the disease in the casual way, do not show that any other disease will be excited subsequently, which is peculiarly imputable to the old practice.”

“ 16. CONCLUSION.—From the above comparative statement it is manifest that it is highly to the interest of the British public to adopt *universally* the inoculation of the vaccine pock in the place of small-pox.”

\* These two last positions (12 and 13) Dr. PEARSON lays the claim of having discovered.

## SECT. XIV.

THE EXPERIENCE OF WILLIAM FERMOR, ESQ.

IT is fortunate for science, when gentlemen, not of the profession, take the trouble to investigate subjects whose establishment is of the utmost importance to society. The world listens with attention to their statement, as they can have no self-interest to serve, and when fortune smiles on the author, as in the present instance, all he says is heard with that attention which the present writer so amply merits.

“Although the original virulence of the small-pox,” says Mr. FERMOR \*, “and its fatal effects have of late years been considerably diminished by the modern practice of inoculation, it does not appear that its contagious influence has been much abated; on the contrary, its universality has certainly been much extended. Hence it has compelled almost

\* This extract is made from a small pamphlet, entitled, “*Reflections on the Cow-pox*,” &c. The judicious writer has the following motto, descriptive of his own conviction:

Segnius irritant Animos demissa per Aurem,  
Quam quæ sunt oculis Subiecta fidelibus.

HORACE.

For a further account of this work, vide note, \* page 70.

every individual to submit to inoculation, notwithstanding constitutional habits and family complaints may have rendered its good effects *precarious*. Nay, how few parents are there who have not had many anxious moments on account of the result, notwithstanding they have employed the most eminent in the profession and the coolest mode of treatment.”

“How necessary it is likewise to chuse a sequestered spot for its communication, detached from places inhabited by the commonalty, who, from prejudice or disinclination, refuse to avail themselves of the salubrious effects of this important discovery! What an expence has the Government of the country incurred by inoculating the army alone, and how have the military contributed to spread the disease, by communicating it to the inhabitants of the places they passed through, as well as to those amongst whom they afterwards resided.”

“What an absence from duty was necessary for the soldier, during its progress, and what a diminution of bodily strength, even under its most favourable appearances! What considerable danger frequently arose from the intemperance and misconduct of the patient; and how many lives were often lost by their fatal consequences!”

“Let us now review the *nature* of the cow-pox, and its *effects*. The disorder requires no previous or subsequent regimen. No infection attends it; the complaint is in general merely local; and no absence from ordinary employments, nor is any medicine



dicine necessary. In a national and civil light, what an important discovery!"

These *conclusions* were the result from an experience of 326 persons, who were inoculated by, or in the presence of, this gentleman, of whom 136 were re-inoculated for the small-pox, but were found *proof* against this disease \*.

"I am happy," says Mr. Fermor, "to say, that my experiments have been made with the most liberal concurrence, and under the inspection of many of the most respectable and learned professors of the University of Oxford, and the most noted practitioners of its environs, whose names will appear in the annexed account; and who, from motives of humanity, and principles truly patriotic, have been so kind as to give up much of their time and attention to this very interesting subject."

"Amongst the rest, I feel myself particularly indebted to Dr. WALL, of distinguished professional abilities, and clinical professor in that university; to Sir CHRISTOPHER PEGG, the public reader in anatomy there; to Dr. WILLIAMS, the regius professor of botany; who have not only encouraged me in this undertaking, but have been witnesses of its salubrious effects. I feel myself likewise under particular obligations to Mr. GROSVENOR, a very eminent surgeon there; who had been so kind

\* Vide Mr. Fermor's excellent pamphlet, in which will be found the names and parishes of each individual inoculated.

as to inoculate some of our patients afterwards with variolous matter, and to give up much of his time to the inspection of them after their inoculations. I am happy in having this opportunity of acknowledging likewise my obligations to Messrs. DAVIS, surgeons of eminence at Bicester; to Mr. BRAINE, surgeon, of the same place; to Mr. OLLEY, of known professional skill, at Brackley; and to Mr. WATSON, surgeon, at Aynho; who have been so good as to inoculate, with variolous matter, the patients I had previously inoculated here with the cow-pox."

"During the course of these experiments, upon so considerable a number of different subjects of all ages, from *eleven days* to *seventy-five years*, no pustule appeared on any of them, but on the inoculated part, except in two instances; a single pustule on the forehead of one, and one upon the arm of another. No sickness of any consequence ensued, nor any loss of time from ordinary avocations. The disorder was not communicated by contagion to any who refused to submit to its inoculation. The symptoms which generally occurred were, a pain in the axilla, or in the head, sometimes in both; but no sickness, or, one may say, much constitutional illness. Indeed, some of them were entirely free from all the above complaints. An efflorescence generally appeared about the punctured part, and sometimes extended, though without pain, down the fore-arm, and up to the shoulder. But  
this

this happened very seldom. No medicine of any sort was administered, nor had any of them any inflammation on their arms that could create much uneasiness."

"It is not necessary for me to say more on this truly interesting subject. I leave the impartial reader to his natural reflections; but I think, in consequence of the above premises, I may venture to say, that he will *now* be of opinion that the *genuine COW-POX is mild in its effects, congenial with every situation and employment of life, totally void of contagion, and a certain preservative against the baneful influence of the small-pox. And that no constitutional or family complaint can interfere with its effects, or prevent its adoption.*"

## SECT. XV.

## MR. KELSON'S EXPERIENCE.

FROM the observations of Mr. KELSON, of Seven-oaks, published in the Medical and Physical Journal for July 1800, it appears "that the vaccine virus may be intermixed with the variolous, without being chemically combined with it. Hence two sorts of eruptions were produced; one of pink, fiery-looking *blisters* \*, the other of *pustules*. Those who were inoculated from the former, had the cow-pox;

\* This appearance is thus described by Dr. Pearson. "Sometimes, but *in very few instances*, I have found, after inoculation for the cow-pock, moderate sized pimples, but containing little or no limp, and never any pus, to arise, and this chiefly about the arm, where the original vaccine pustule has been rubbed off, or in irritable habits has gone on unkindly, and likewise after the disease has gone through its progress; these spots, so unlike the small-pox," he continues, "gave no trouble, and were of short duration, and according to Dr. Jenner are unworthy of medical consideration." I mention this fact here, from observing that such pimply eruptions have sometimes excited uneasiness in parents, and that they may arise *occasionally*, especially with children about the teeth, where there has been no exposure to the small-pox. —In the case of Mr. Squib's child, inoculated for the cow-pock by me whilst the sister laboured under a very bad confluent sort of natural small-pox, there was a number of these  
pimples,



pox; those who were inoculated from the latter, had the small-pox; and where the cow-pock and small-pox pustules interfered with each other, matter being taken from this, produced the two diseases, with the two kinds of eruptions."

"In one of Mr. Kelson's first cases the vaccine disease appeared in the mildest form possible. The matter taken from this patient, Mr. Kelson soon learnt to prefer. From this *no eruptions* occurred, in upwards of a *hundred* patients, whom he inoculated, from *two weeks* old to *eighty years*. In the autumn he received a fresh supply of matter from Dr. Pearson; with which he inoculated as many more, without having *one eruptive case*."

Mr. Kelson is of opinion, "that the vaccine disease, when unattended with eruptions similar to variolous, *is a thousand times more trifling than the small-pox*; he scarcely had a patient sufficiently ill to prevent amusement or labour." He says, "the local inflammation is not to be dreaded; only requiring a fingered rag, when the pustule happens to be rubbed off,—and that it is not an infectious disease."

"To determine this last point, he selected about forty people in the workhouse, and inoculated half of them, some in both arms, and fixed them to sleep with those who had not had the disorder; but

pimples, which appeared on the face only, and the patient escaped the small-pox, no variolous pustules having taken place.

in

in no instance was it communicated to the others. He broke the pustules, and frequently made them smell the parts; but to no effect."

"After giving the disease to the remainder, the following experiments were made, in order to ascertain whether it was a security against the small-pox. *First*, he inoculated the whole party with the most virulent matter he could procure; but nothing ensued, except local superficial inflammation for the first six or seven days.—He *then* introduced a wretched family, just recovered from a very bad small-pox, their dirty clothes unchanged, and divided these in different beds among them; but to no purpose."

"He after this inoculated with the cow-pox an infant, and as soon as he was satisfied that infection had taken place, had it put into the bed with its sister, who had the most dreadful confluent small-pox; but no inconvenience ensued."

"The greater part of these patients Mr. Kelson has *since* inoculated again, both with vaccine and variolous matter; but without effect. Most of the others whom he inoculated, have had variolous matter inserted afterwards, for the satisfaction of themselves or friends."

"He never knew an instance of its occasioning scrophula, or any cutaneous disease; and has never given a single dose of physic, either before or after inoculation."

SECT.

## SECT. XVI.

## MY OWN EXPERIENCE.

AFTER so much has been presented to the public on the *cow-pox*, it might appear superfluous in me to say any thing on this subject; but considering the question of the utmost importance to society and the comfort of families, and believing that the inoculation of the village of Lowther, and the proofs that were manifested there, of the *cow-pock* affording an absolute security from the small-pox, must have equal weight here, as in the northern counties; and knowing also that prejudices yet exist against this salutary improvement; I am induced to add my testimony to the mass of evidence already brought forward; taking up this question, indeed, from no personal motives, but for the interests of humanity, and to settle, as far as my humble ability will permit, the public mind, and to solicit, from the rulers of a generous nation, that reward to which so extraordinary a discovery is in justice entitled to.

The *first* PUBLIC INSTITUTION where the *cow-pock* was introduced was that over which I have the honour to preside as physician, and the vaccine inoculation, as daily performed by me *gratis*

to

to every applicant at the ST. MARY-LE-BONE GENERAL DISPENSARY, was advertised at my expence frequently in the public papers, and otherwise made known by printed accounts and oral communications, so that the mass of evidence derived from this source is very considerable: but I have rather preferred relating to the public *my experience* in *one spot*, as the evidence is in *a quarter* where the facts are concentrated, their authenticity easily ascertained, the conclusions from the number sufficiently satisfactory, and as tending to shew, that the *general inoculation* of the *cow-pock* is not a *chimerical idea*, and the *extirpation* of the *small-pox* an *improbable event*.—Whenever I contemplate this interesting subject, I always smile within myself, by thinking, that as other wise men have found out interpretations for other hieroglyphicks, that in this I behold fulfilled the story of ST. GEORGE, our tutular saint, *fighting*, and *overcoming* the DRAGON.

From visiting the Marquis of Exeter at Burghley, near Stamford, I proceeded on professional duty, to Raby castle, in the North Riding of Yorkshire, the seat of the Earl of Darlington, and from thence went to the Earl of Lonsdale's at Lowther, in Westmoreland. In this excursion I found the cow-pox was a disease equally unknown to professional men as to the inhabitants of those quarters; and the following circumstance led to its first establishment in the Northern Counties.

Soon after my arrival at *Lowther*, after having  
first



first had the honour of being shewn by his Lordship the wonderful prospects surrounding this old illustrious seat of great and distinguished characters, I was taken to *Lowther-town* to see the manufactories established there by his Lordship. Here I was shewn carpets, worth from three to four hundred pounds, which excel in taste and workmanship the Brussels; and here it is, that more than an hundred orphans taken out, and apprenticed to his Lordship, from the Foundling Hospitals of London and York, have found a peaceful protection, and are instructed in labour by the superintendent Mr. Bloom, who is furnished by his Lordship with all the materials for these useful and ornamental labours, and has a yearly salary affixed for conducting the whole, and a piece of ground allotted for the cultivation of flowers, in order that the embellishments of these elegant productions of art may be faithful transcripts from nature, with permission also to keep a few cows in his Lordship's park.—A manufactory of woollen stockings of exquisite workmanship is likewise carried on in the same place by Mrs. Bloom.

Being myself a parent, I could not fail to notice at the manufactory a lovely little boy, who with native sweet simplicity seemed “unheedful” of the company he was in, and was in all kinds of antics. This child appeared to be, and was in fact, a very great favourite of his grandfather and grandmother, the superintendents of the manufactory, and he was the more endeared to Mrs. Mason, his  
fond

fond and virtuous mother, from having a constitution naturally weak from his birth, and as being the first and only pledge of her husband, who had been then absent from her (from causes I have neither inclination, or wish, to inquire into, or unfold) for upwards of three years.

The anxious thought of the whole family was how they could secure this favourite child from the natural small-pox; hence he was always kept in sight, nor would they have ventured with him to the village of Lowther, or any of the neighbouring towns, for the world: nor, indeed, were such apprehensions altogether groundless; for, not many years back, the small-pox had broken out in *Lowther-town*, when the blacksmith, his sister, and two servants of his Lordship, and the son of the park-keeper, were swept off by that dreadful pestilence, one only out of six surviving!

His Lordship, knowing the apprehension entertained by these people, proposed to me that Master Mason should be inoculated with the cow-pock, and, with his Lordship's natural condescension and goodness, explained in a clear manner the difference between the two species of inoculation, and the superiority of the one over the other.

The proposal was gladly embraced, and I was desired by his Lordship to send for vaccine matter from London, and through the favour of Mr. Ring, who with the most laudable zeal has been indefatigable not only in propagating himself this inoculation,

tion, but in furnishing opportunity for others to do the same, by freely supplying medical gentlemen with vaccine matter to all parts of the world, I soon procured from him on several lancets the means of carrying this intention into execution. Accordingly, October 4, 1800, I inoculated DANIEL JAMES BLOOM in both arms.

As Mr. Bloom is a very intelligent man, I requested him to remark the symptoms arising from the cow-pock, and to draw up a statement of particulars, which he did as follows.

“ The EARL OF LONSDALE accompanied by Dr. Thornton, as they were going out an airing, honoured me with their presence, when the NOBLE EARL witnessed the first inoculation of the cow-pock in this country, which was performed by two punctures just piercing the skin, so as to fetch no blood, the end of the lancets being first moistened with saliva, and the cow-pock matter mixed with it by means of the two lancets being rubbed at the points against each other. At the end of two days there appeared a little redness where the cow-pock matter was inserted, and on the third day there was a pimple like a flea-bite, which increased in size until it lost its pimple-like appearance, which was about the eighth day, and became like a pustule of the small-pox, the sides distending, and the top flattening, when a red circle of inflammation, resembling the burr of the moon in a misty night, appeared, and the flesh around the pustule was as hard as any



boil whatever, and seemingly as much distended, and inflamed. On the ninth day I became rather alarmed, the child began to droop in the evening, his eyes looked heavy, he felt sick, but could not vomit, complained of head-ach, grew to be very hot, was very restless, and passed a feverish night. The symptoms abated towards morning, but returned the following evening, but much slighter; and on the following day he was cheerful and as well as ever. The pustule had turned, it became a hard brown scab, commencing in the middle, and so extending itself over the whole pustule. The florid inflammation was converted into a faint purple. The skin by the thirteenth day surrounding the pustule became white, and next peeled off. The tension and hardness of the arm diminished, and the pain and small swelling under one arm-pit by the fifteenth day was quite gone.—The inoculation only took place in one arm, and when the scab came away it left a deep-pit, as with those inoculated for the small-pox.”

The following queries were made to Mr. Bloom.

*Qu.* What is the age of your grandson?

*Ans.* Four years and a half.

*Qu.* Is he healthy?

*Ans.* On the contrary; he is a very sickly child.

*Qu.* Did the inoculation produce pustules?

*Ans.* None, except the one on the arm.

*Qu.* Had he fever in consequence?

*Ans.* A considerable degree of fever.

*Qu.* On



*Qu.* On what day after inoculation did this fever come on?

*Ans.* On the ninth day.

*Qu.* Had he any tumour under the axilla?

*Ans.* Stiffness and pain in that part, and a gland was felt there enlarged to the size of a pea.

*Qu.* Was his health impaired?

*Ans.* He appeared not in the least to have suffered from the inoculation.

*Qu.* Was he inoculated since?

*Ans.* Being so certain that he was secure from the small-pox by the vaccine inoculation from what I saw, I refused to have him inoculated for the small-pox, as I could not see it would answer any useful purpose, the evidence of the fact from the inoculation at the village of Lowther being sufficient to convince every reasonable mind.

The mistress of the inn at Crackenthorpe, having heard of his Lordship's kindness to Mr. Bloom's family, and wishing to avail herself of a similar advantage, petitioned his Lordship, whose tenant she was, to have her children likewise inoculated with the cow-pock, being seven in number, and they were accordingly all inoculated from Master Mason.

I had the following answer to the queries by an apothecary, who carefully watched the symptoms.

CHARLOTTE IVES, æt. 9.

*Qu.* How many pustules?

*Ans.* One.

N 2

*Qu.* Any

*Qu.* Any fever?

*Ans.* Very slight.

*Qu.* What were the symptoms?

*Ans.* A Degree of heat on the skin, and want of appetite, with a sense of weariness.

*Qu.* How long did this continue?

*Ans.* One night, and the following day.

*Qu.* At what period after inoculation did it come on?

*Ans.* On the ninth day.

SOPHIA, æt. 6.

*Qu.* How many pustules?

*Ans.* One.

*Qu.* Any fever?

*Ans.* Very slight.

*Qu.* What were the symptoms?

*Ans.* As the other, but with some thirst.

*Qu.* On what day after inoculation?

*Ans.* On the ninth, but rather earlier in the day than her sister, more restless at night, but the next day was as well as ever.

*Qu.* Any swelling under the arms?

*Ans.* None.

LYDIA, æt. 2 years.

*Qu.* How many pustules?

*Ans.* One.

*Qu.* Any

*Qu.* Any fever?

*Ans.* None.

HENRY, æt. 1 year.

*Qu.* How many pustules?

*Ans.* One.

*Qu.* Any fever?

*Ans.* No complaint whatever.

JOHN, æt. 10.

*Qu.* How many pustules?

*Ans.* One.

*Qu.* Any fever?

*Ans.* A considerable degree, which came on the eighth day, aggravating a severe cold caught at this time; complained of great head-ach, and he had a troublesome cough which continued a fortnight, but he got well of this, and was as well afterwards as before inoculation.

*Qu.* Any swelling under the axilla?

*Ans.* None.

JAMES, æt.  $7\frac{1}{2}$ .

*Qu.* How many pustules?

*Ans.* One where the inoculation was, and a smaller one that rose regularly about two inches from the other.

*Qu.* Any fever?

*Ans.* The fever seemed to be much in his head; he had thirst, great lassitude, and this continued for two days and two nights.

*Qu.* On what day after inoculation did this come on?

*Ans.* The tenth day.

*Qu.* Any swelling under the axilla?

*Ans.* One, the size of a pigeon's egg, under the right arm-pit, which appeared on the ninth day, increased for three days, then gradually diminished, and, at the end of the week, dispersed.

*Qu.* Was this tumour painful?

*Ans.* It produced a stiffness, and gave, upon motion, some uneasiness.

OBSERVATIONS.—In these *eight* cases the reader has the common phænomena of the cow-pock inoculation. Two out of eight were free from fever. The fever, however, was rather more considerable than usually arises from the vaccine inoculation, the period of its arrival was from the eighth to the tenth day, but, as being unaccompanied with danger, it claims, as the tooth-ache, little regard with the medical practitioner. There was no general eruption in any of these cases. The solitary pustule near the inoculated one in a single instance is a circumstance that may, perhaps, occur once in several hundred trials. Two patients had an affection under the axilla, a gland there being enlarged. This circumstance is not unusual; but as being unattended



tended with danger, and only a temporary uneasiness, is of trifling consideration. In the *first case*, a sickly child, much affected with worms, was inoculated with the cow-pock. He is rendered thereby secure from the small-pox ever after. All the parents' fears about the child were instantly dispersed. The probability in this case, had he been inoculated with the small-pox, is, judging from example, (but to such inoculation the parents I am persuaded never would have consented,) that he would have died, or his constitution been so much impoverished, that he would have lingered out a very painful existence.—In the *other instances*, I need not state, what would be the distress at an inn from so many labouring under the small-pox, the anxiety it must have created, the trouble, and the suspension for a time of part of the business of the house. The supposition of death with these patients, and other miseries, will not here enter our calculation.

#### INOCULATION OF THE VILLAGE OF LOWTHER.

We hasten now with pleasure to the inoculation of the *Village of Lowther*. This is a most pleasant picturesque village, situated two hundred and eighty miles from London, seven miles from Penrith, and a mile from the ancient famous mansion of Lowther, and was built by the present Earl of Lonsdale, in the Italian taste, is regularly slated, contiguous, from two to three stories high, each house being of stone,

and, without doubt, is the most tasty village in the kingdom. It contains about four hundred inhabitants.

His Lordship, observing, with great acumen, the cause of the prosperity of the North of Ireland, after having built in this delightful spot a village unique of its kind, sufficient to contain five hundred inhabitants, sent over to Ireland for manufacturers of cloth to set the example of the true welfare of a nation. Here it is all his Lordship's linen, as table-cloths of damask, napkins of the same, towels, sheeting, and long-cloth; in short, every article of linen in use, have been fabricated, and no other is at present employed either at his Lordship's establishment in London, or at Lowther. Besides these manufacturers, all his Lordship's labourers reside here, rent free, and are paid a regular stipend both summer and winter, and, however old, are paid equally as when they could exert their youthful strength. It was with pleasure that I witnessed, in the winter, potatoes given as usual, meat, and bread; and when any of the wives are near their time to be brought-to bed, they send to Lowther for linen, and are allowed beer-caudle during the month. The villagers indeed generally lament that there is no public-house throughout the whole place; but his Lordship no less regards their temporal than their eternal welfare.

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—Agricolæ  
O fortunati nimium sua si bona norint!

VIRG.

Hence

Hence it is that the village of Lowther exhibits what should be the pride of English nobility, a fine healthy industrious peasantry, supported by, and contiguous to, a rich domain.

Let the reader of sensibility contemplate the difference between that pride of nobility, which desolates a country to extend a park, and that patriotic spirit, which, at a considerable expence, establishes towns and villages, for the purpose of manufacture.

Every thing seemed to conspire to render our experiment the most decisive imaginable. His Lordship observing with a true patriotic eye, which looks beyond the *narrow* circle of *private* advantage, considering only the *public* welfare, had shewn himself adverse to *partial* inoculation; hence the younger part of the whole village for upwards of twenty years were exempt from the small-pox, and therefore liable to this disease.

As fortune would have it, during the period Daniel Mason was under vaccine inoculation, one of the industrious little villagers, a lad aged nine or ten years, had picked up mushrooms, which at that time were uncommonly abundant, and carried them for sale to Penrith, unknown to his parents, where the small-pox then raged, and had swept off a number of persons. This child took, in consequence, the natural small-pox, and exhibited signs of it, when Daniel Mason had just recovered; and ROSE, æt. 9, the child of his Lordship's porter,

was



was in a right state for propagating the vaccine inoculation.

It was now harvest time in the north, both for hay and corn, and there was not to be an idle hand throughout the whole village. No language can express the dismay that was spread from this event. Amidst this universal consternation and dread of the small-pox, seen by groups of old people anxiously conversing of the impending calamity, his Lordship ordered the glad tidings of a general inoculation with the *cow-pock* to be proclaimed, the advantages of which were stated, had been seen, and were believed, and the whole assembly were ordered to appear in review at Lowther before his Lordship.

Upon going to see the child labouring under the natural small pox, I found his face greatly tumified, not a feature to be discerned; blind, covered with pustules from head to foot, the whole face was one smear of blood and gore, and the parlour he lay in being small, the stench was so intolerable, that I was obliged soon to quit the room to hinder myself from being sick. I proposed inoculating the other two children with the small-pox; but the mother was much prejudiced against inoculation, and had rather "trust them to God's will," hence I foresaw that I should obtain a full completion of my views \*.

The

\* The small-pox being a disease, whose laws are little known by the majority of people, I have endeavoured in  
this



The happy villagers now thronged to his Lordship's domain ; and it was a most pleasing sight for me to see assembled at Lowther in the steward's room, in the presence of his Lordship, so many persons to whom I was about to render the most essential service ; at the same time I was enabled to

this pamphlet to insert also the most prominent features of the small-pox ; and here, therefore, I would observe that infection only commences after the eruptive fever, and takes from seven to fourteen days before the seeds of this disease when sown manifest themselves : and this curious fact is the most frequent cause why some idly boast of being themselves, or having children, proof against the small-pox, and why all may escape the danger, which warns like the *rattle snake*, before it seizes on its prey. " Many instances," says the great and learned Dr. Heberden, " have occurred to me, which shew, that one who never had the small-pox might safely associate, and even lie in the same bed, with a variolous patient, for the two or three first days of eruption, without receiving the infection."

By comparing this observation with the facts contained in Dr. Haygarth's work on the small-pox, it appears, that when one person is accidentally seized with the small pox in a family where others are liable to it, the rest may generally avoid the natural infection, either by separation or immediate inoculation.

*Maturation* appears to be the season when the variolous miasms are emitted most copiously ; the poisonous pus being exposed, at that period, naked to the air, according to the accurate description of the faithful Sydenham. " *Usque ad hunc diem*" octavum a primo insultu " *pustulæ, quæ faciem obfederant, læves ad tactum fuere atque rubræ, jam verò asperiores evadunt* (quod quidem primum est incipientis maturationis indicium) et subalbidæ, paulatim insuper *succum* quendam luteum, colore a favo non abludentem, *evomunt.*"

make

make the most decisive experiments respecting a practice, which promised to be an epoch in the annals of medicine, and I flatter myself that the importance of the subject, and the present period of time, when Dr. Jenner's claim is before the House, will be a sufficient apology for my publishing the scattered observations I at that time made, and without the smallest view to their publication.

### MEMORANDUMS.

I. MARY BRYHAM, æt. 20, is a *good-looking well-grown* girl, of a very florid complexion, the daughter of a groom of his Lordship's, William Bryham, who has superintended his Lordship's stables upwards of forty-eight years. The arm rose finely, pustuled, and then scabbed, but there was not the slightest constitutional affection.

OBSERVATIONS ON THIS CASE. Having passed through the vaccine disease (as far as regards the essential circumstance, a proper pustule forming itself, and going through its respective stages, which occupies a space of from fifteen to twenty days,) I introduced her to where lay my wretched patients in the natural small pox, one child was hardly recovered, and a second was in a deplorable condition, blind, and at that time dreadfully moaning. I shall never forget the expression of alarm manifested by the girl's countenance, she having never  
seen

seen this disease before. The blackness had not quite worn off the face of *one*, a *second* was at its height, and a *third* sickening; and if fear increases the predisposition to take infection, there was no want of this here \*, and with the utmost difficulty I could get her to come near these children; but having, after much persuasion, the first surprise being over, consented to let me inoculate her plentifully with the variolous matter in both arms, she afterwards was induced to touch the children labouring under the small-pox with her hands, and catch their breath, but to no purpose, for having had the cow-pock, she was insusceptible of the small-pox, in whatever way attempted to be given; she was indeed *proof* against this disease, as much, if not more so †, than if, instead of the cow-pock, she had had the inoculated small-pox.

\* Besides the horror of the scene, *another cause* might have conspired. There lives in the same village along with her, ANN ROPER, the daughter of her mother's sister, and this girl was so dreadfully scarred by the SMALL-POX, that she was rendered, to use the vulgar phrase, a *perfect fright*; she was said before to have been a *bonny lass*, and I might add, that she has from the same cause a speck over her right eye, of which she is blind.

† For there are a few authenticated cases of persons having had twice the small-pox, but I should doubt such facts, unless for *the authorities*: but rather than believe them, may I not be allowed to say "*humanum est errare.*"



2 & 3. THOMAS NICHOLSON, æt. 6, and JOHN, æt. 1, his brother, a child at the breast, passed through this disease, as is common. On the eighth day the accession of fever came on, rather stronger marked than usual, the symptoms of which were heaviness, a want of appetite, disinclination for food, an increase of heat, the sleep at night restless. Sometimes these symptoms, especially with infants, are accompanied with nausea, and actual sickness; but these in a day or two pass off, and the patient is left in perfect health. There was no eruption in either of the two cases.

OBSERVATIONS. The first reflection that must naturally strike the reader is, that the child who was in arms, labouring under the cow-pock, did not communicate this disease to the mother, who never had had the cow-pock, hence this disease is not infectious; secondly, being next door neighbours to the Smiths, and after the cow-pock had scabbed, being permitted to visit their former playmates, that they had resisted the small-pox. Besides this chance, they were each inoculated by me plentifully with the small-pox matter; and not satisfied with this, I had them put *naked into bed*\* with their neighbour's child covered with

\* The examples of this sort, furnished by my practice as Physician to the Mary-le-bone Dispensary, are extremely numerous. I shall mention, however, only a very few strong cases,



with maturated pustules ; but it was all to no purpose, they were rendered by the cow-pock insusceptible

cases, thinking that more would be needless and tiresome to the reader.

Two years back I inoculated JOHN KING, æt. 3, and THOMAS, æt. 1½, children of the publican, who lives in Margaret-street, at the corner of Great Portland-street, with the cow-pock, and they scarcely ailed any thing. Mr. King's niece not long after came out of the country, and on her arrival in town fell ill of the natural small-pox, and had them very full. John King *slept* with her the whole time ; they both were with her in the day ; and the mother relates that, frequently since, they have been in company with children labouring under the small-pox, never wishing them to avoid it. And to complete the decisiveness of this fact, I had them both, at two separate times, inoculated for the small-pox ; but having had the cow-pock, they were rendered thereby insusceptible of the small-pox.

I inoculated JOHN, THOMAS, and WILLIAM PLANT, who live in Edward-yard, Edward-street, and they had the cow-pock the usual mild way ; a fourth child was inoculated with the small-pox, and a plentiful crop of pustules were produced. The children being in the same house, eat, drank, and were constantly together, but no infection took place. I then inoculated these three repeatedly with the small-pox : but they were found ever to be *proof* against that disease.

ELIZABETH RESTIEAUX, living at 38, Castle-street, Oxford-market, was inoculated by me three years ago, and had the cow-pock in the usual mild way. A year after this she was in the same house where there were three children who were seized with the natural small-pox in a very bad manner, and she was constantly with them, and has since been taken repeatedly to houses at my instigation in which the small-pox

was ;

ceptible of the small-pox in whatever way attempted to be given.

4, 5, & 6. JOHN HUTCHINSON, æt. 9, WILLIAM,

was; and she has also been inoculated by me twice with the small-pox and once with the cow-pock, at different intervals, but without these producing the smallest effect more than a slight scratch from a lancet.

MARGARET PITCHET was inoculated by me two years ago. Some months after she had had the cow-pock, a child in the same house, No. 8, Duke's-court, Bow-street, took the natural small-pox, and was covered with pustules from head to foot. These children were together as usual: but no small-pox was communicated; and having inoculated her at least a dozen times since, at different periods, I found her in every instance *proof* against the small-pox.

MARY, ROBERT, THOMAS, and ALEXANDER ROUTLEDGE, living in St. Ann's-court, were inoculated by me for the cow-pock. MARY was *purposely* sent to a relation's, whose child had just taken the natural small-pox, and continued there three weeks, but never caught the small-pox, having previously had the cow-pock. A lodger in the same house refusing to have her two children inoculated with the cow-pock at this time, a few weeks after, lost both by the natural small-pox.

Mrs. HUTCHINGS, housekeeper of the Rev. Mr. Townsend, author of the "Guide to Health," having come to live in town with her husband, had her child inoculated by me with the cow-pock; with this child in her arms she nursed a friend's child labouring under the natural small-pox, who with difficulty recovered from it; nevertheless her infant did not take the small-pox, having previously had the cow-pock.

The same was the case with Mrs. BRITAIN, No. 3, Pit-street, whose child escaped the small-pox from having had the cow-pock,

LIAM, æt. 7, and THOMAS, æt. 2, went properly through the several stages of the cow-pock pustule. JOHN and THOMAS had an accession of Seven on the eighth day. WILLIAM ailed nothing.

OBSERVATIONS. These were next door neighbours to the Smiths, on the right, and being suffered to enter the house of their old playmates after the *cow-pock* had scabbed, they were exposed to the contagion of the small-pox for hours together; they were also plentifully inoculated by me for the small-pox, but were all three insusceptible of that disease.

7. THOMAS JOHNSON, æt. 13, was inoculated like the rest in the arm. The occupation of this lad was to drive a cart, usually in company with his father, for the Earl of Lonsdale, and going to Penrith on the fifth day after inoculation, he drank a pint of strong-beer given him by one Pellet, at Mr. Hutchinson's brewery, and came back that same day with his team, having walked upwards of fifteen miles, in consequence there was an attempt towards forming a kind of eruption, one pustule appearing on the breast, and another on the

pock, although two children died of the natural small-pox, at the next house, to which her child was often taken.

Two of my own children, CHARLES, and ANNA MARIA, who were inoculated by Dr. Jenner for the cow-pock, and ailed nothing but the pustule on the arm, were both afterwards inoculated by me for the small-pox, but without its producing that disease.

O

cheek,



cheek, which actually scabbed over, and he passed a restless and feverish night, and continued feverish the next day and night, after which he was able to drive his team and three horses as usual, and being inoculated by me with the small-pox matter, and frequently exposed to the influence of the small-pox in the house of the Smiths, he was found unsusceptible of that disease.

OBSERVATION. What would have been the consequence of such imprudence under variolous inoculation as was exhibited in this case I leave to the conjecture of the sensible reader! The appearance of a couple of pustules, and these maturing, is a very rare occurrence; for this disease is almost invariably confined to the inoculated pustule, and most probably arose from his blood being overheated by the beer and exercise.

8. MARIA JOHNSON, æt. 16, his sister, had the cow-pock without any accompanying fever.

OBSERVATION. She was inoculated twice for the small-pox, and rubbed her hand over Smith's children, and was frequently in the infected house, but was found unsusceptible of that disease.

9. WILLIAM HODGING, æt. 13, was inoculated in both arms; the pustule took, however, only in one. He is carpenter to the Earl of Lonsdale, and works with his father in the raff-yard. On the ninth day he had an accession of fever, but not so much as to make him leave off work.

OBSERVATIONS. This youth lives but two doors from



from the infected house, was taken by me into this house, and brought so near to the children as to receive their breath, and at seven different times was inoculated both for the small-pox, and as many times for the cow-pock, but having had the latter decease, no proper pustule rose, performing its regular stages, or exciting the least constitutional affection, and hence he may be safely declared uninfected of either disease.

10. MARY HENLEY, æt. 14, was inoculated also in both arms. It took effect in both places, and the pustule on the left arm rose finely, and did extremely well; but that on the right arm got rubbed by some means, formed itself into an ugly scabby sore, producing real pus under it, and as fast as the scab came away, it formed a larger sore, very deep, and was a very troublesome wound for more than six weeks, the scab filling up the place, extending to nearly the size of half a crown; and this would have been set down as an untoward case of vaccine inoculation, depending upon some peculiarity in the constitution, unless fortunately we had inoculated both arms, and the one had done so kindly. She had no fever, or any constitutional affection. Was taken into the house, where the natural small-pox was, and inoculated then, and several times after, but to no purpose; she was uninfected of the small-pox.

11: MARIA FRY, æt. 7, had one pock, the fever was of one day and night's continuance, and her

father described her “as burning like a coal, sick, but not to vomit, and as rambling in her sleep.”

OBSERVATIONS. When she had gone through the cow-pock I made a double experiment; I inoculated her with the small-pox, and at the same time her sister CHARLOTTE, æt. 15, who had had the small-pox when seven years old, and was terribly disfigured by it, with the cow-pock; and, contrary to my expectations, there was a pustule formed in MARIA FRY’s arm, and a general consternation took place among the villagers; but upon examination, there was no bur of inflammation round it, no hardness, no regular pustular rising; it scabbed on the fourth day\*, and produced no constitutional disease, or any pustules, the cow-pox in CHARLOTTE FRY died away like a common scratch.

It may not be irrelevant to mention here, that JANE MATTINSON and MARY DUNN, both presented themselves to be inoculated, but from their own account it was more than probable they had had the small-pox. The former had nursed a child

\* In a few instances where a pustule has been formed of either kind, the progress was found to be very different from the true pustule, and this kind, like a seed sown on ground, or in a climate, not congenial, came forward, and soon passed off, whereas the other has its regular stages of rising, falling and scabbing. Those who have the bastard pustules, if I may so call them, have complained of much *itching*, which I have not observed in the other sorts, and at the end of ten days the pustule was gone without leaving behind the usual large and deep scar.

who

who died of that disease ; it was the child of his Lordship's park-keeper before mentioned. At the same time I inoculated these with the cow-pock, I also inoculated the brother of Mattinson, a young man who was dreadfully scarred and marked with the small-pox, and JAMES BROOM, who had also the marks of that disease ; and these were done with both sorts, but in each instance there was only produced a slight temporary local irritation, and both places before the fourth day died away. It appears, therefore, from these and other facts, that those who have had the cow-pock are insusceptible of the small-pox, and *vice versa*.

12. RICHARD WALKER, æt. 24, carpenter, on the ninth day was attacked with a fever, was light-headed, wanted to get out of bed, the next day, the tenth was enabled to do some work, could not work much, had the fever return at night, after which he ailed nothing, continuing his labour as usual all the while, except on the one day mentioned. Inoculated with both the cow-pock and small-pox, but neither took effect.

13. HARRIET FLETCHER, æt. 18, had only one pustule, and says she was able to follow all her domestic concerns as usual, never being laid up a single day. Inoculated with the small-pox, but was found like the rest, insusceptible of that disease.

14. JOHN SAUNDERSON, æt. 10, had one pustule and ailed nothing, his brother

15. JOSEPH SAUNDERSON, æt. 7, had a fever for



two days and nights, was hot and restless, the fever came on on the seventh day. Both were inoculated with the small-pox, but without effect.

16. WILLIAM PATTERSON, æt. 9, had one pock, also a small one underneath, which came out a few days after the other, feverish two days and nights, the fever commenced on the ninth day. Inoculated with the small-pox, but it took no effect.

18. HANNAH MANDLE, æt. 2, had one pock, never ailed any thing.

19. MARY FALOFIELD, æt. 11, one pock, feverish on the eighth and ninth nights, but played in the interval.

20. JOHN HENLEY, æt. 16, one pock, never ailed any thing.

21. HANNAH M'CRAN, æt. 9, one pock, never ailed any thing.

22. SARAH M'CRAN, æt. 7, one pock, and another came out an inch below it, which was much smaller, and which went in stages, and scabbed like the other; ailed nothing.

23. THOMAS RICHARDSON, æt. 4, one pock, no fever.

A PARTICULAR OBSERVATION. He is terribly scarred in the face and body, a year before, his clothes catching fire, when the child was nearly burnt to death.

GENERAL OBSERVATION. These six having had no perceptible constitutional affection, they were inoculated again with the cow-pox, but this took no effect,



effect, also with the small-pox, but they were likewise proof against both.

### THE CONCLUSION or INFERENCE.

Fearful that continuing the same monotony would only fatigue my readers, and imagining to urge more facts might be considered as an insult even to the meanest comprehension, I shall therefore just sum up, that *forty-eight* inhabitants of the village of Lowther, of different ages, who had never had the small-pox, were inoculated by me for the cow-pock, and having passed through this disease without risk or danger of life, or person, that they were nearly all, at least the majority, inoculated afterwards at two remote periods for the small-pox, and exposed to its infection by being brought into the room where the small-pox was, but in not a solitary instance did any receive this disease. Such an escape in such a number cannot possibly be attributed to any peculiarity of constitution: but it must be allowed to the true cause, the preventive influence of the cow-pock. This law amounts therefore to an absolute certainty, or demonstration; for whence do we form the notion that fire burns the flesh? My personal experience and traditional report does not approach to half the number of instances respecting the preservative power of the cow-pock, nor has indeed any one a more ample or better ground for be-

lieving that cork swims. To disbelieve *now* the efficacy of the cow-pock, must therefore arise either from IGNORANCE or PREJUDICE; and indeed there are reported to be even *at this time* a few doctors, who do not credit the thing, but I flatter myself, this report is unfounded, for an ignorant doctor is a *misnomer*; and respecting vulgar prejudices \* these mental mists will, it is hoped, soon vanish before the clear sunshine of truth.

PROGRESS OF THE VACCINE INOCULATION IN THE  
NORTH.

From such demonstrative evidence of the superior advantages of the cow-pock, the Countess of DARLINGTON, daughter to the Duchess of Bolton, who is sister to the Earl of Lonsdale, had her last child inoculated with the cow-pock, although Lord Barnard and four other children of the Earl of Darlington had had a mild disease from the small-pox inoculation. Colonel LOWTHER, Member for the county of Westmoreland, who was with his Lordship, had a child of his inoculated with the same, although he had seven before inoculated with the small-pox; and Colonel SATTERTHWAITE, member for Cockermouth, a borough of his Lordship's, being at Lowther, having lately lost a grand-child by small-pox inoculation was rejoiced to embrace this opportunity, and had vaccine matter from me sent to

\* These prevail more in the South than in the North.

his

his son-in-law, Dr. Head; Captain PRESTON of Warcop, coming to Lowther, followed the example, mentioning "that the reason why he had not had his child before inoculated with the small-pox, was the fear of bringing this disease into his village." And such indeed was the general conviction of the *country people* of the efficacy of the cow-pock, (namely, its power of rendering the constitution insusceptible of the small-pox, and that it was a disease infinitely milder than the small-pox, never killing, not infectious, and giving little or no trouble) that the whole country around Lowther came to solicit a participation of the benefits resulting from the cow-pock, and on several days I was engaged in inoculating to the amount of 110 \* persons,

Mr.

\* SPECIMEN OF ONE DAY'S INOCULATION, THE NAMES BEING OBLIGINGLY TAKEN DOWN BY MR. STOREY.—Ann Davidson, æt. 23; John Pearson, æt. 2; Christopher Thompson, æt. 3; Hannah Lancaster, æt.  $1\frac{1}{2}$ ; George Sanderson, æt. 4; John Powley, æt. 5; William Powley, æt. 6; Christopher Stephenson æt. 17; *from Great Strickland.* William Rigg, æt. 4; Mary Rigg, æt. 6; *from Little Strickland.* Henry Hodging, æt. 3; Joseph Hodging, æt. 1; *from Pattindale.* Elizabeth Jackson, æt. 15; John Jackson, æt. 19; James Jackson, æt. 15; Mary Jackson, æt. 8; William Jackson, æt. 4; Isabella Scott, æt. 11; Jane Wilkinson, æt. 18; Richard Mounsey, æt.  $2\frac{1}{2}$ ; John Mounsey, æt.  $\frac{1}{2}$ ; *from Martindale.* Joseph Ireland, æt. 3; John Shepherd, æt. 10; *from Newton.* Sarah Robinson, æt. 14; Joseph Robinson, æt. 12; Mary Robinson, æt. 10; Hannah Robinson, æt. 8; Elizabeth Robinson, æt. 6; Ann Robinson, æt. 4; Thomas Robinson, æt.  $1\frac{1}{2}$ ; William



Mr. STOREY, his Lordship's apothecary, kindly assisting me in this work of humanity.

It

Ham Thompson, æt. 5; *from Barton*. John Nelson, æt. 8; Henry Nelson, æt. 6; William Nelson, æt. 4; *from Whale*. Peggy Ballentine, æt. 2½; *from Knipe*. Mary Hayton, æt. 3; Andrew Harding, æt. 2; *from Ashham*. Esther Wilson, æt. 2; Esther Coulthard, æt. 6½; George Coulthard æt. 4; William Wilson, æt. 18; Jane Wilson, æt. 1; *from Penruddock*. Sarah Coalson, æt. 5; *from Cleborn*. Mary Graham, æt. 2; *from Ilaculthorp*. Sarah Nicholson, æt. 1½; John Nicholson, æt. 3½; Hannah Parker, æt. 16; John Dalton, æt. 4; Joseph Dalton, æt. 1½; Francis Moor, æt. 28; Mary Tours, æt. 5; Wilson Tours, æt. 2; Esther Todhunter, æt. 8; Joseph Todhunter, æt. 14; Nelly Todhunter, æt. 10; *from Spartnit*. Ann Wilson, æt. 24; Mary Wilson, æt. 4½; Sarah Parker, æt. 19; Mary Jackson, æt. 28; *from Thackthet*. John Fidler, æt. 6; Lucy Fidler, æt. 4; Ann Fidler, æt. 2; Thomas Fidler, æt. ¾; *from Roan*. Francis Hodgson, æt. 42; Thomas Hodgson, æt. 14; Richard Hodgson, æt. 12; Mary Hodgson, æt. 11; John Hodgson, æt. 1½; John Docher, æt. 2; George Davidson, æt. 2; *from Newton*. John Sewell, æt. 2; *from Bolton Moor*. Robert Watson, æt. 3; *from Wainston*. Ann Forster, æt. 18; *from Milkenthorp*. William Pooley, æt. 10; Richard Pooley, æt. 6; *from Barton Church*. Joseph Jackson, æt. 20; *from Thackthwaite*. John Morland, æt. 8; Mary Moreland, æt. 6; Jenny Morland, æt. 4; Thomas Morland, æt. 1; *from Swindale*. John Waterhouse, æt. 13; *from Dacre*. Barb. Dodd, æt. 8; Elizabeth Dodd, æt. 5; Ann Dodd, æt. 2½; Jane Robinson, æt. 2; *from Morland*. William Brown, æt. 1; Francis Brown, æt. 2; William Newton, æt. 1; *from Newbiggin*. Francis Walker, æt. 2; Margaret Teafdale, æt. 1½; Elizabeth Teafdale, æt. 4; John Castlow, æt. 15; Sarah Castlow, æt. 12; Elizabeth Castlow, æt. 10; William Jackson, æt. 13; Elizabeth Howgarth, æt. 19; Bella Howgarth, æt. 15; Agnes Howgarth,



It was a most charming sight to behold the finest peasantry in the world assembled at Lowther for the purpose of having themselves, or of giving the cow-pock to their children, to secure them ever after from the horrid ravages of the small-pox; and such was the courage displayed, that out of 110 persons mentioned in the note as inoculated in one morning, I do not recollect seeing more than one frightened at the sight of the lancet, nor were the fears of this child communicated to the rest. So thronged were the carts and waggons and horses loaded with the rich treasures of the country, that, as at fairs, there were women who came to Lowther with cakes and fruit, and the turnpike man desired I would go through his gate toll-free, saying, "he had never

garth, æt. 12; *from Ross-gill*. William Wills, æt. 3; Jane Wills, æt. 4; John Nicholson, æt. 5; Thomas Nicholson, æt. 6 weeks; *from Soenbridge*. Jane Sinton, æt. 36; *Penrith*. The reader will find the number of inoculated persons on this morning, to be 110, from 6 weeks old to 42 years of age, and when the question was asked, whether they would have come in such numbers to have the small-pox? there were very few, who did not declare, that they disliked the small-pox, each assigning different reasons: but the principle objection was, "they had known such, and such, die from the inoculated small-pox," and "that they could not *spare the time* to attend upon a sick family," and several smilingly said, "they could not *afford to pay for it*;" nor did a single individual express the smallest distrust of the virtue of the cow-pock, but all received the inoculation both *cheerfully*, and *thankfully*!

had

had so many people pass his gate before." The number inoculated by me at Lowther, amounted in all to above a thousand, and calculating what others have done from my example, I should suppose that the number must have risen since to many thousands.

Sir JAMES GRAHAM of Netherby near *Long-Town*, on the borders of Scotland, being much indisposed, came to the Earl of Lonsdale's at his Lordship's desire, on purpose for my advice, and having witnessed the good effects of the cow-pock, he took matter back with him to have his nephew (the child of the Rev. Mr. Graham, the rector of Arthuret) inoculated, and that he might extend this blessing to his tenantry \*. Of the pleasing result of this case I have the satisfaction of laying the following letter before my readers.

" Dear Sir,

" I have had the pleasure to receive your kind letter. My little boy has had the cow-pock so very favourably, that little or no fever has attended the complaint, if any; it was very trifling on the eleventh

\* Sir James Graham, M.P. is a baronet of equal philanthropy and urbanity, married to the daughter of the Earl of Galloway, and is said to have the best concentrated estate in the kingdom, the whole of Netherby being his possession, and this one estate yielding 12,000 per annum.

night;

night; *seven* children were inoculated from him yesterday. I am happy to hear Lord Lonsdale is better, and hope you will soon restore him to perfect health; I beg my respects to his Lordship. My brother is considerably better from your skilful advice.

“ I am, dear Sir, with great esteem,

“ Your’s, most faithfully,

Arthuret,

“ FERGUS GRAHAM.

Nov. 24, 1800.

“ P. S. The inflammation on the arm was about the size of a shilling.”

I was equally anxious to establish the cow-pock at *Carlisle*, which is situate but nine miles from Long-Town, and Dr. HEYSHAM, an eminent physician of that city, proposed setting the example by having his own child, only six weeks old, inoculated; but my first attempt failed, as the following letter shews.

Carlisle, Nov. 1, 1800.

“ Dear Sir,

“ I received your very obliging favour on the 23d ult. and delayed answering it till now that I might have it in my power to acquaint you with the result. Agreeable to your advice the infant was  
inoculated

inoculated with the lancet the very day it arrived. The operation was performed by a surgeon who is much in the habit of inoculating, and who did it very neatly, and without drawing blood; and the lancet was wiped on the part agreeable to your directions, notwithstanding which, I am sorry to inform you, no effect has been produced. Had she fortunately received the infection, several of my friends were disposed to have had their children inoculated from her, and the practice, I have no doubt, would soon have become *general* in this neighbourhood."

"I shall inclose the lancet in this letter, and flatter myself you will have it in your power to return it in a few days, loaded with fresh matter, and the child shall be inoculated again, and I hope with more success."

"If, however, you cannot favour me with recent matter, I will make the experiment with the old which you sent upon the cotton thread; but I should greatly prefer fresh, because if it should fail a second time, it might be the means of discouraging the practice, which I feel very anxious to promote."

"I am, dear Sir, with great respect,

"Your much obliged humble servant,

To Dr. Thornton,  
Lowther.

"JOHN HEYSHAM."



As a more certain mean of imparting the cow-pock, I agreed with the parents of one of the villagers, who had the pustule in a proper state, to set out on horseback, for Carlisle, with his child, Mary BROWN, a girl only five years old, which was consented to ; and immediately upon reaching Carlisle, after a journey of twenty-six miles, *nine* persons were inoculated from her by Dr. Heysham, of which event the following letter is a document.

Carlisle, Nov. 13, 1800.

“ Dear Sir,

“ I return you my best thanks for your very obliging letter, and am certain the inhabitants of this city are under great obligations to you for your kind attention in sending a healthy subject under the action of the cow-pock. Nine children have been already inoculated from her under my inspection, and several more will follow their example to-morrow. As soon as the infection takes place, I shall advertise a *general inoculation* at our dispensary ; by which means I doubt not but the practice will become *universal* in this part of the country. My little girl was inoculated with your second lancet the moment it arrived, but without effect, and a third time yesterday with one received per favour of Sir James Graham. I shall attend to your P. S.

and

and will recommend to all the surgeons to make use of very clean lancets, and matter taken early in the disease \*."

" I am, dear Sir, with great respect,

" Your much obliged humble servant,

" JOHN HEYSHAM."

The pleasing result of the first trials at Carlisle will be seen from the following letter.

Carlisle, Dec. 6. 1800.

" Dear Sir,

" Mr. Alderman Richardson left your favour yesterday evening, when I was out of town; and as I understand he means to return to Lowther, either this day, or early to-morrow morning, I embrace this opportunity of informing you that all who have been inoculated here where infection took place, since you sent the little girl, have done extremely well. Not one of them was affected with any considerable fever, or any kind of sickness to excite the smallest uneasiness.

\* This P.S. alluded to the power of rust in destroying the specific virtue of the cow-pock matter, and producing, in consequence, the *spurious* instead of the *true* pustule; also to the cow-pock pustule losing its specific virtue after the ninth or tenth day; vide note \* page 114.

" With

“ With respect to my own child we have been rather unlucky, as she has not received the infection though inoculated three times with the dry matter you were so kind as to send. And since we received the recent matter we have been under the disagreeable necessity of changing her nurse no less than twice, and at present, on account of an indisposition common to children, must postpone the inoculation.

“ I have the honour to be, dear Sir,

“ Your much obliged humble servant,

“ JOHN HEYSHAM.”

Upon the return of the little child, after this expedition, I was careful in observing the effects of so long a journey, at this season of the year; and I remarked with pleasure that the fever had been slight, but two pustules came out on the face, which completely matured, and scabbed. Dr. Heysham generously discharged all the father's expences at Carlisle; Mrs. Graham at Low-House, in the neighbourhood, who had her child vaccinated, gave him ten and sixpence; and Dr. Blamire, who took some vaccine matter from the child, gave the father a crown; and he also received many other presents, which he very honestly mentioned, refusing what I had agreed to pay him; but I insisted upon fulfilling the terms of our original agreement.

The two following letters will shew my endeavour to establish the cow-pock at *Whitehaven*.

“ Sir,                      Whitehaven, Oct. 25th, 1800.

“ I delivered your observations, relating to the cow-pox, to Dr. DIXON, who desires me to say that he thinks himself highly obliged to you, and requests you will send him a little of the matter for inoculation, with proper directions how to use it, thinking it would be the means of saving a great number of lives here \*.

“ I am, Sir,

“ Your most obedient and humble servant,

Dr. Thornton,  
Lowther.

“ JOHN BOWNESS.”

“ Sir,                      Whitehaven, Nov. 21st, 1800.

“ Receiving a letter from my father last night, stating, that you wished to hear how my brother came on after his inoculation, enables me to embrace the opportunity of returning my grateful thanks for introducing the cow-pock to my brother and myself, who have both got through the same exceedingly well. I have inoculated several children at Whitehaven and Workington; likewise have fur-

\* Dr. Dixon, Dr. Croftwaite, and Mr. Hamilton, have since introduced the vaccine inoculation into the Whitehaven Dispensary, and have inoculated a great many.



nished several doctors with matter to do the same. They are all fully convinced of the great advantage arising from the cow-pock; yet, they inform me, from the bigoted notion of the public, they fear they shall not be able to get it introduced. What they allege appears *strange* to me; as with those I had opportunity to inoculate I found it not difficult to do away *any prejudice* that tended to injure the introducing so useful a discovery to the human race. On the 22d instant I shall have to inoculate near *twenty* of his Lordship's work-people's children.

“ I remain your most obedient

“ humble servant,

Dr. Thornton,  
Lowther.

“ WILLIAM BRYHAM \*.”

*Lancaster* was not forgot, as the following letter will evince.

“ Dear Sir,                      Lancaster, Dec. 10th, 1800.

“ I have this evening received from Mrs. Dilworth (Mr. Yarker's daughter) a little vaccine matter, for which I find I am indebted to you, and for which accept my sincere thanks. I have found

\* William Bryham superintends Lord Lonsdale's collieries, and since this period has inoculated above 500; his sister's case is in page 204, being among the first inoculated in the village of Lowther.

great difficulty in introducing the new inoculation here; and had it not been for a sensible and intelligent *lady*, Lancaster would not yet have witnessed its introduction. Since then I have inoculated several, perfectly to my satisfaction; and the other day I made proposals to my friend Mr. Bafendale, who is surgeon to the Lancaster Dispensary along with myself, to inoculate the poor in this town and its vicinity, gratis. With pleasure I inform you it met with his approbation, and with that of Dr. Campbell, and in a few days we begin the business.

“ I am, dear Sir, with great respect,

“ Your obedient and faithful servant,

“ J. A. BRATHWAITE.”

Nor was *Appleby* forgot, as the following letter will shew.

“ Dear Sir, Appleby, Dec. 17, 1800.

“ This day week I inoculated fifteen with fluid cow-pox matter, all of whom, excepting one or two (which are dubious), have taken the infection, and the pustules look charmingly. The prejudices of the common people against the operation are sinking to nothing; and I am fully persuaded, that in a very little time the inoculation will become  
*general.*

*general.* I will not fail to transmit to you a regular account of those under my care.

“ I remain, dear Sir, with great respect,

“ Yours most sincerely,

“ JOHN BUSHBY.”

Nor was even *Ulverton* omitted by me.

“ Dear Sir,

“ With the lancet you *last* sent me I inoculated RIGGE, but am much afraid, from the appearance of the incisions, or rather punctures, not with the success which has attended my other operations in this new and excellent practice. I have here matter taken from the arms of some of my patients; but, from a prejudice which you will easily allow for, his friends here will not allow the disease to be produced in him by any other means than such as originates from you *directly*. I must, therefore, trouble you to send me a little fresh matter for him as soon as convenient. In sending small-pox matter to a distance, I have found it very certainly sent by having two small square pieces of glass, one surface of each being besmeared with the matter, applied together, and tied by a piece of thread.

“ I have already inoculated between twenty and thirty of different ages, from matter you first sent, and they have had little or no fever or any observ-

able complaint, save the local inflammation of the punctured parts ; except in one instance, a daughter of Mr. Sandy's of Grathwaite-Hall, who became feverish the fifth day after being inoculated, and had three pustules upon her face, which were filled with a much more transparent fluid than small-pox generally contains, and these literally scabbed like the inoculated pustule on the arm.

" You will accept my best thanks for your kind attention, and believe me,

" I am, dear Sir,

" With the greatest esteem,

" Your much obliged, and obedient servant,

" WILLIAM. HARRISON."

Ulverstone,  
Dec. 1, 1800.

I could also mention *Penrith*, *Kendal*, *Temple-Sowtherby*, and many other towns about Lowther, in which I introduced the vaccine inoculation : but am fearful it would too much trespass on the patience of my readers. I shall, therefore, hasten to the pleasing contemplation of having, I think, been instrumental by this means in the extirpation, for the present, of the small-pox from this distant part of England : for having requested, a year after my inoculation of the village of Lowther, that Mr. STORY would re-inoculate



re-inoculate these villagers with small-pox matter, I received from him the following letter.

“ Dear Sir, Penrith, Nov. 7, 1801.

“ I received your favour, and would with pleasure comply with your request, if I could get any matter for inoculation. I have sent to *Carlisle, Keswick, Appleby, &c.* and I am well informed *that there is no small-pox in this country at present, owing to your inoculation with the cow-pox.* I first went, as you wished, to Lowther, to acquaint Lord Lonsdale with the contents of your letter; and his Lordship says, he has not the least objection to the children in the village being inoculated with the small-pox matter, which would be directly done, provided I could get the matter, which at present I cannot; but whenever I am able to procure any, you may rest assured, that I will with much pleasure comply with your request; and

“ I have the honour to remain, dear Sir,

“ Your most obliged humble servant,

“ RICHARD STORY.”

Hence I had occasion to send down to Penrith the small-pox matter between two pieces of glass

for Mr. Story, to re-inoculate the inhabitants of Lowther village, and his report was as follows.

“ Dear Sir,

Penrith, Nov. 20, 1801.

“ The glasse with the small-pox matter arrived safe, and with considerable pleasure I set about re-inoculating those persons who the last year had been inoculated by you with the cow-pock in the village of Lowther ; and I remarked with much satisfaction that I found none whom I inoculated to take the small-pox, the places of insertion of the matter in a few days dying away. This makes the experiment at Lowther decisive. It afforded much pleasure to his Lordship, who desires to be kindly remembered to you, and wishing you, sir, all the rewards your great exertions for the good of mankind, and advancement of science, so justly merit.

“ I have the honour to be,

“ Dear Sir,

“ Your obliged faithful servant,

“ RICHARD STORY.”

GROUND FOR HOPES OF THE TOTAL EXTIRPATION  
OF THE SMALL-POX.

The disappearance of the small-pox from so many towns in the north of England from the cow-pock inoculation, must give the most heartfelt satisfaction to every mind endowed with sensibility, and as being an epitome of the greater conquest, namely, the extirpation throughout the globe of the small-pox, in our humble opinion, merits to be recorded as the *harbinger* of that effulgent day, when the benign radiance of the cow-pock like the sun will extend its glorious influence throughout every clime. Already it has been *partially* received in all the civilized countries of the habitable globe, and promises ere long to realize the just expectations of its warmest advocates, by being *generally* adopted from the judicious and proper interference of the LEGISLATIVE POWERS†.

† Vide Note \* page 238. When the small-pox was first introduced into Otaheite, and the destruction was so great, as to threaten the entire subversion of the state, these *ignorant savages* formed laws, by which they stopt the progress of the calamity. MEAD.—How much more reason have we then to expect the subjugation of this formidable enemy of the human race, in a more enlightened period, and from more enlightened statesmen, an easier mean being now in our power, that restrictive laws to prevent infection, namely the cow-pock,

pock inoculation, which, perhaps, might be enacted in each state, for no one is born for himself alone; each being placed with reference to the community!—And thus there being no longer left any *ferrel* for the small-pox to blaze up into a great national calamity, hence the delightful prospect of the speedy and certain annihilation of the small-pox throughout the whole habitable globe,



## DR. JENNER'S PETITION.

A Petition of EDWARD JENNER, Doctor of Physic, was presented, Wednesday, March 17, 1802, by Admiral BERKELEY, to the House of Commons, and read; setting forth, "That the Petitioner having discovered that a disease, which occasionally exists in a particular form among cattle, known by the name of Cow-pox, admits of being inoculated on the human frame with the most perfect ease and safety; and although its symptoms are so mild as scarcely ever to prove even a temporary impediment to the ordinary course of health, yet it is attended with the singularly beneficial effect of rendering through life the person so inoculated secure from the infection of the small-pox; and that the Petitioner, after the most laborious and attentive investigation of the subject, setting aside all considerations of private advantage, and anxious to promote the safety and welfare of his countrymen, and of mankind in general, did not wish to conceal a discovery so made, on the mode of conducting this new species of inoculation, but immediately disclosed the whole to the public, and, by communication with medical men in all parts of this kingdom and in foreign countries, sedulously endeavoured to spread the knowledge of his

his discovery and the benefit of his labours as widely as possible; and that, in this latter respect, the views and wishes of the Petitioner have been completely fulfilled, for, to his high gratification, he has to say, that this inoculation is in practice throughout a great proportion of the civilized world, and has in particular been productive of great advantage to this kingdom, in consequence of its being introduced, under authority, into the army and navy, and that the said inoculation hath already checked the progress of the small-pox, and from its nature must finally annihilate that dreadful disorder; and that the series of experiments by which this discovery was developed and completed, have not only occupied a considerable portion of the Petitioner's life, and have not merely been a cause of great expence and anxiety to him, but so interrupted in the ordinary exercise of his profession, as materially to abridge its pecuniary advantages without their being counterbalanced by those derived from the new practice; and that the Petitioner, with a view to obviate doubts, which of late were *falsely* \* represented to have arisen in a foreign country respecting the efficacy and certainty of the vaccine inoculation, and thereby to enable himself with better confidence to solicit the favourable attention of the House, was induced to delay his

\* Vide the Appendix, page 237.

application till after the time limited by the House for receiving petitions of a private nature was elapsed; and therefore praying, That leave may be given to exhibit a petition, that the House will be pleased to take the premises into consideration, and grant him such remuneration as to them shall seem meet.

ORDERED, That, in consideration of the particular circumstances set forth in the said petition, leave be given to present the petition as desired.

Then a petition of EDWARD JENNER, Doctor of Physic, being offered to be presented to the House, Mr. ADDINGTON, Chancellor of the Exchequer, (by HIS MAJESTY's command,) acquainted the House, That HIS MAJESTY, having been informed of the contents of the said petition, recommends it to the consideration of the House.

Hence the said petition was brought up and read, containing the same allegations as the preceding petition; and praying the House to take the premises into consideration, and to grant him such remuneration as to them shall seem meet.

ORDERED, That the said petition be referred to the consideration of the Committee, and that they do examine the matter thereof, and report the same as it shall appear to them to the House.

And

And a Committee \* was appointed accordingly, and they have power to send for persons, papers, and records.

ORDERED, That five be the quorum of the said Committee.

\* Being summoned before this Committee, I had the honour personally of presenting them the present work, presuming, that as a medical man I should stand excused the liberty I took; and I shall conclude with hoping, that when the rulers of a generous nation shall have decreed a full remuneration to Dr. JENNER (for here liberality and justice are the same) that they will also make wise regulations against the small-pox inoculation, here proved to be a Public Nuisance, as *destructive* as, at the present period, it is *unnecessary*. Whether an order for a *general inoculation* of the *cow-pock* is consistent with a free state may be doubted by some, but laws against the *small-pox*, as against the *plague*, are not only allowable, but called for; and this, with the sanction of Parliament to Dr. JENNER, would operate more than any thing else to obtain the full establishment of the cow-pock inoculation in these united kingdoms.



## APPENDIX.

WITH a view to counteract the influence of false reports in England respecting vaccine inoculation, industriously spread to prejudice the public mind, the following TESTIMONIAL was drawn up and signed by the most respectable practitioners in London, and published in all the periodical pamphlets and newspapers.

“Whereas many unfounded reports having been circulated, which have a tendency to prejudice the public against the inoculation of the cow-pox; we, the undersigned physicians and surgeons, think it our duty to declare our opinion, that those persons who have had the cow-pox are *perfectly secure* from the future infection of the small-pox.

“We also declare, that the inoculated cow-pock is a much *milder and safer disease* than the inoculated small-pox.

## LONDON PHYSICIANS.

William Saunders, M.D.	Alexander Crichton, M.D.
Matthew Baillie, M.D.	Thomas Bradley, M.D.
Henry Vaughan, M.D.	Sayer Walker, M.D.
Maxwell Garriehore, M.D.	Richard Dennison, M.D.
J. C. Lettsom, M.D.	Thomas Denman, M.D.
Nathaniel Hulme, M.D.	W. G. Maton, M.D.
James Sims, M.D.	Michael Underwood, M.D.
John Sims, M.D.	John Squire, M.D.
Gilbert Blane, M.D.	Richard Croft, M.D.
William Lister, M.D.	R. J. Thornton, M.D.
Robert Willan, M.D.	Robert Batty, M.D.
William Blackburne, M.D.	Thomas Garnett, M.D.
J. M. Hayes, M.D.	John Gibson, M.D.
Andrew Thynne, M.D.	Robert Hooper, M.D.
C. Stanger, M.D.	Edward Bancroft, M.D.
Edward Fryer, M.D.	Lewis Poignand, M.D.

SURGEONS.

## SURGEONS.

John Abernethy,	William Lynn,
William Blair,	John Mackinder,
G. M. Burrows,	Jonas Malden,
Samuel Chilver,	William Maslic,
Henry Cline,	Joseph Millington,
A. P. Cooper,	James Moore,
David Dundas,	William Morris,
Thomas Farquhar,	Thomas Paytherus,
Henry Fearon,	John Pearson,
Edward Ford,	J. W. Phipps,
James Gilder,	Thomas Pole,
J. M. Good,	John Ring,
John Griffiths,	Thomas Rolph,
James Higgins,	John Rush,
James Horsford,	Thomas Seagrurn,
Joseph Hurlock,	James Simpson,
Francis Knight,	H. L. Thomas,
Edward Leese,	Jonathan Wathen,
Lewis Leese,	Thomas Whateley,
James Leighton,	Stephen Woolriche.

The REPORT of the Committee of vaccine inoculation at Paris, instituted by the order of Government, signed by the most eminent practitioners there, may be seen page 143 of this work.

THE END.

A  
L E T T E R

TO

DR. PERCIVAL,

ON

THE PREVENTION

OF

INFECTIOUS FEVERS.

AND

AN ADDRESS

TO THE

COLLEGE of PHYSICIANS at PHILADELPHIA,

ON THE

*Prevention of the American Pestilence.*

"Hunc lenire dolorem

"Póssis, et morbi magnam deponere partem."

HOR. EP. I. I. 34.



*Read to the Literary and Philosophical Society of Bath.*

BY

JOHN HAYGARTH, M.D.

F.R.S. LOND. F.R.S. AND R.M.S. EDINB. AND MEMBER OF THE  
AMERICAN ACADEMY OF ARTS AND SCIENCES.

BATH, PRINTED BY R. CRUTTWELL;

FOR

CADELL AND DAVIES, STRAND, LONDON.

1801.





TO

THOMAS PERCIVAL, M.D.

F.R.S. AND A.S. LOND. F.R.S. AND R.M.S. EDINB.

MEMBER OF THE

ROYAL SOCIETY OF MEDICINE AT PARIS;

OF THE ROYAL SOCIETY OF AGRICULTURE AT LYONS;

AND OF THE

AMERICAN PHILOSOPHICAL SOCIETY AT PHILADELPHIA;

AND PRESIDENT OF THE

LITERARY AND PHILOSOPHICAL SOCIETY OF MANCHESTER.

## I. PRELIMINARY PRINCIPLES.

MY DEAR FRIEND,

YOU were involved, for a considerable time, in many difficulties and anxieties in consequence of the exhortations which I have addressed to you, on different occasions, to adopt effectual measures for the prevention of that infectious Fever which had long and fatally prevailed in

Congratulations.

B

and

and near Manchester. But I trust that you always forgave my importunities, even when they had brought you into the greatest embarrassments, and that you now feel the purest heartfelt satisfaction, on the complete triumph of truth and humanity, which you have finally obtained. Your good sense, discretion, and firmness, aided by the like excellent qualities which your colleagues, the physicians of the Manchester Infirmary, fortunately possess, have, I hope, with unexampled success, vanquished every prejudice. Both in your alarms and your joy my mind has cordially sympathized with your's.\*

\* The institution of the HOUSE of RECOVERY at Manchester originated from the proposals on this subject, which, in our correspondence, I had frequently communicated to Dr. PERCIVAL on various occasions, for above twelve years. An extract from one of my letters to him, which was accidentally discovered during the contest concerning this Establishment, for the reception of Fever patients, is thus published in the Manchester Gazette, on the 23d of April, 1796:—

“ BOARD

The difficulties with which you had to struggle, will, in the end, be highly beneficial to our cause. This very con-

“ BOARD OF HEALTH.

“ The Committee have thought it advisable to lay the following extract before the publick, in order to shew, that they have not been governed in the measures which they have adopted, by mere opinion, as has been alleged, but by WELL-AUTHENTICATED FACTS and LONG EXPERIENCE.

“ *Extract of a letter from Dr. HARGARTH to Dr. PERCIVAL, dated Chester, Dec. 29th, 1794.*

“ A typhous Fever became very epidemical among the poor in Chester, about the time it began in Manchester; our Fever wards in the Infirmary became crowded to a greater degree than they have been since the establishment of this regulation, near a dozen years ago. But these measures have checked the progress of the epidemic; very few Fever patients are now heard of in the whole town. The regulations proposed by your physicians will undoubtedly be of service; but, in my opinion, are inadequate to cure the malady. A Fever Hospital annexed to your Infirmary, to hold about twenty patients of each sex, would save a multitude of lives in your populous town. Your physicians who visit the home-patients, are exposed to imminent danger of contagion; in a well-ventilated, clean hospital, the medical attendant is not, I apprehend, liable to infection. I am, and have been for several years, collecting facts to illustrate various questions relative to this interesting subject.”

test

test has been the means of noticing and recording numerous interesting facts; it has more generally excited the publick attention to this subject; the transaction has attracted the observation, not only of physicians, but of other leading characters in society, who are most eminent for their knowledge and beneficence. Whenever an epidemical Fever spreads fatally among the people, the most intelligent part of mankind will now recollect how easily and effectually the calamity may be prevented.

Fatal Effects  
of Contagion

I have long thought, that there is no subject on which a physician could employ his time and ability more advantageously for the benefit of his fellow-creatures, than in the investigation of the nature of febrile Contagion, in order to ascertain the laws by which it is communicated, and by what means it may be prevented. It is well known to be the  
cause



cause of very extensive destruction among mankind; especially in the army, the navy, and all large towns. These calamities appear to proceed from error and ignorance, rather than from the inevitable danger of the Distemper. By an attentive observation of facts, and by rational arguments founded upon them, conclusions of great importance seem to be brought fairly within our comprehension and knowledge.

So long ago as 1774, you may remember, that an enumeration of the inhabitants of Chester was undertaken under my direction. Upon this occasion, I instituted such medical investigations as so fair an opportunity presented. My attention was particularly attracted by two epidemical Distempers, the Small-Pox and an infectious Fever, which, that year, had prevailed in the city. But the latter Contagion had spread in no unusual degree,

First Proposal of Fever Wards.

gree, and would undoubtedly have passed without notice, if the questions necessary for the purpose of numbering the inhabitants had not brought it under my special consideration.

Out of sixteen columns of inquiry which were answered in this survey, seven of them were engaged in ascertaining the state of these two Distempers. In the paper “*on the Population and Diseases of Chester,*” which was re-printed in the Philosophical Transactions in 1775, the original idea of checking the progress of infectious Fevers among the poor is fully and explicitly proposed in the following words:—

“ Another reason of mortality in the suburbs (of Chester) seems to be, that their inhabitants in general are of the lowest rank: they want most of the conveniencies and comforts of life: their houses are small, close, crowded, and  
dirty.”

dirty.” “ In these poor habitations, when one person is seized with a Fever, others of the family are generally affected with the same Fever, in a greater or less degree.

“ If a regulation could be universally adopted, of immediately removing out of the family such of the poor people as are seized with Fevers, it is evident that the most salutary consequences would follow. Reasonable objections might be made to receive such patients into the general Infirmary, even into separate wards, lest the Infection should spread through the whole house. But might not this and every other objection be obviated, by erecting on the ground which adjoins and belongs to the Infirmary, a small building to be divided into spacious airy apartments, where patients infected with Fevers, and properly recommended, might be received on any day of the week? Besides  
medical

medical assistance, they would here enjoy clean linen, airy rooms, careful attendance, and wholesome diet.”

This proposal excited no attention until 1783, when the inhabitants of Chester were alarmed by the progress of an infectious Fever, which was fatal to some of our most respectable fellow-citizens.

The Progress  
of infectious  
Fever first  
noticed.

In 1777, I began to ascertain, by clinical observations, according to what law the Variolous infection, and in 1780 and 1781 according to what law the Febrile infection, is propagated. I found that the pernicious effects of the variolous miasms were limited to a very narrow sphere. In the open air, and in moderate cases, I discovered that the infectious distance does not exceed half a yard.\* Hence it is probable that, even when the Distemper is malignant, the infectious influence extends but to a few yards from

\* See the *INQUIRY how to prevent the Small-Pox*, p. 97.  
the



the poison. I soon also discovered, that the Contagion of Fevers was confined to a much narrower sphere. Upon these principles, which it is the main purpose of this letter to explain and establish, I discerned the safety and wisdom of admitting Fever patients into separate wards of the Chester Infirmary itself, instead of an adjoining building, as I had proposed in 1774.

We are more accurately acquainted with the properties of the variolous than any other febrile poison; because the infecting matter is perceptible by our senses of sight, touch, and smell; and because the practice of inoculation has greatly extended our knowledge on this subject. For these reasons, the same mode of investigation will be pursued on this question, as was followed in the “*INQUIRY how to prevent the Small-Pox,*” and in the “*SKETCH of a Plan to exterminate the casual*

*casual Small-Pox from Great-Britain,"*  
which I published in 1784 and 1793.

Typhus de-  
scribed.

The following observations on Contagion are chiefly confined to what has been denominated the low, slow, nervous, putrid, petechial, malignant, pestilential, jail, ship, camp, hospital, &c. Fever, or Typhus. For the sake of accuracy, a brief description of it may be proper.

You know that the Typhus is commonly caught from infection, though it is probably sometimes produced by other causes. It usually begins with slight irregular chills, alternating with heat. The following symptoms succeed—a remarkable prostration of strength; great lassitude; pain on the exertion of muscular motion; a languid countenance; depression of spirits; sighs; a loss of appetite, with a loathing of food; frequently sickness, sometimes attended with vomiting; thirst; deafness; watchfulness, or dis-  
turbed

turbed slumbers with disagreeable dreams. The bowels are sometimes costive, sometimes loose, with an increased discharge of bile. The pulse is generally weak, and often, but not always, frequent. The heat of the body is generally less increased than in most Fevers, but is sometimes so great as to give a sense of burning heat, when the skin is touched. The patient has very often a head-ach, but seldom any fixed pain in other parts of the body. This Fever is of very uncertain duration, but usually continues for several weeks; and sometimes, even with these symptoms of the *mild* Typhus, proves fatal.

In this Fever, more malignant symptoms often appear, as, *subsultus tendinum*, with more general tremblings and twitching; hiccup; delirium; brown, or black sordes on the teeth and tongue; *petichia*; *vibices*; clammy sweats; an offensive bilious or bloody dysentery, with other  
signs

signs of putrefaction; *coma*; involuntary excretions.

First Observations on the Nature of Febrile Infection.

My first observations to discover the laws by which the febrile Infection is communicated, began in two Cheshire villages; at Raby in 1780, and at Barrow in 1781. As the latter afforded the most instructive cases, I shall particularly state them.

Mr. CHEERS, a farmer of Barrow, on the 21st of April, 1781, went a journey to Manchester, Cheadle, &c. and returned home on the 24th.\* At that time, his family and neighbours were entirely free from all epidemical Distempers. He was attacked by an infectious Fever on the 22d of May, that is, on the 29th day after his arrival at his own house. Sixteen other persons in this family were affected with a similar Fever, at the periods stated in the I<sup>st</sup>. Table. His

\* See Table I.

wife,



wife, who was his constant nurse, and exposed to the infectious miasms from the beginning, did not sicken till the 37th day. In regard to the intimacy of intercourse among the rest of the family, a sufficiently accurate statement of facts was not recorded.

You will recollect, my dear Friend, that at this time (1781) my attention was much engaged in the investigation of the nature of the variolous poison. I was struck with the difference of the periods in these two Distempers, during which the infection remains in a *latent state*, that is, the interval of time which elapses between the patient's exposure to the pestilential influence, and the commencement of the Fever. In the *Typhus*, this period appeared to be much longer than in the Small-Pox.

Latent Period of Typhous Fever

In this family, the proportion of persons infected with the Fever was much greater

greater than I had expected. Such views of the nature of the poison excited my attention, and an anxious desire to determine, whenever future opportunities might occur, whether these laws were established or confuted by more extensive observations.

Symptoms  
of the Fe-  
ver.

It will be proper to give a short description of the Distemper which attacked the first family. The Fevers which are denominated low, nervous, putrid, &c. may possibly be of different species or varieties. They may be subject to different laws in regard to the period during which the infection remains in a *latent* state in the body; the quantity of poison required to produce infection; and the proportion of mankind liable to receive the Distemper. In this family, the symptoms were—chilly and hot fits; lassitude; head-ach; pain of the back; giddiness; loss of appetite for food; thirst; watchfulness

watchfulness or disturbed dreams; delirium; deafness. Two had a looseness. The father, who brought the Fever into the family, was ill of it for more than two months. They all recovered.

Clear, distinct, and instructive cases of Fevers communicated by infection are with difficulty obtained. The eight following families\* (the II. III. IV. V. VI. VII. VIII. and IX.) came under the observation of Mr. CONNAH, and the three subsequent families (X. XI. and XII.) were attended by Mr. MANNING, when apothecaries of the Chester Infirmary. In almost all these eleven families, the accuracy of their statement was confirmed by my own knowledge of the facts. The account of the progress of Infection in the nineteen next families, (from the XII. to the XXX. inclusive) was communicated in consequence of my inquiries on this

By whom  
Cases ob-  
served.

\* See Table I.

subject,

subject, by Mr. TAYLOR, surgeon and apothecary, of Middlewich in Cheshire. Of the fidelity of these reports, I have reason to be fully satisfied, knowing, from long and frequent intercourse with these medical practitioners, that they were all well qualified to give a faithful and judicious account of the progress of the Distemper.

Reduced to  
a synoptical  
View.

The conclusions submitted to your consideration are deduced from cases so authenticated, and are accurately but succinctly stated in the form of Tables. If they had been otherwise related, the narration would have occupied many pages, and would have exhibited a tedious, and much less distinct, representation of facts. In this synoptical view, are impartially exhibited all the cases which I have been able to ascertain with sufficient correctness.

In



In March 1798, just before my departure from Chester, I received some information relative to an infectious Fever, which had spread through some Cheshire villages, perhaps propagated from the Distemper which I had noticed at Raby, as before-mentioned, in 1780, being in the same neighbourhood. But the facts had happened at some distance of time, before my questions on this subject were proposed, and I ceased to have personal and professional intercourse with my medical informer; so that my intelligence was not so full and accurate as was requisite to establish any useful and satisfactory conclusions.

In the first place, let me desire you, <sup>Tables of Fevers.</sup> my good Friend, to examine, with minute attention, the following Tables, which explain the progress of infection through families. Weigh well the facts therein stated. This may seem to be an irksome task, and

c

to

to many readers it might be so. But I know, from our long and intimate friendship, how highly you value information relative to facts, which can advance medical knowledge, especially if it can be applied to alleviate human misery. You may be, as I was, surprised to find what a large proportion of mankind are capable of receiving this Fever, when fully exposed to the influence of the infectious poison; that is, when confined for days and nights, in the same small close and dirty room, with a patient ill of the Typhus.

TABLES.

TABLES  
OF  
FEVER CASES.

TABLE I.

*Progress of infectious Fevers in Families.*

Families.	Patients.	Date when at- tacked.	Date when Fe- ver began after exposure to infection.	Infected.	Uninfected
I.	1. Mr. Cheers.	May 22, 1781.	29th,	} 17	3
	2. Mr. Jas. Cheers.	June 13,	23th,		
	3. Nancy Walkley,	June 20,	30th,		
	4. Nelly Oulton,	— 20,	30th,		
	5. Tho. Langley,	— 20,	30th,		
	6. Master Cheers,	— 27,	37th,		
	7. Mrs. Cheers,	— 27,	37th,		
	8. Miss Cheers,	— 27,	37th,		
	9. Mr. S. Cheers,	— 27,	37th,		
	10. John Nield,	— 27,	37th,		
	11. { Mary Newport	— 27,	37th,		
	12. { and husband,				
	13. Nancy Rowlands,	July 4,	44th,		
	14. Jas. Thomson,	— 8,	48th,		
	15. Mary Deakin,	— 24,	15th,		
	16. Martha Sefton,	— 24,	63d,		
	17. Robt. Bentley,	Aug. 7,	23d,		
II.	18. Mich. Adams,	Feb. 28,		} 4	0
	19-20. S. & E. Adams,	March 25,	26th,		
	21. John Adams,	— 25,	26th,		
III.	22. Ann M'Donald,	March 10, or April 3,	1st or 25th,	1	0
IV.	23. Eliz. Fleet,	April 3,	25th,	} 6	0
	24. Sarah Fleet,	May 5,	33d,		
	25. T. Fleet, jun.	May 28,	56th,		
	26. Tho. Fleet, sen.	— 30,	58th,		
	27. Mary Fleet,	June 1,	60th,		
	28. Wm. Fleet,	— 4,	63d,		
	V.	29. Wm. Griffith,	March 8,		
30. Mary Griffith,		— 30,	23d,		
				30	3



## PROOFS AND ILLUSTRATIONS.

1. Mr. Cheers went a journey to Manchester, Cheshire, &c. on the 21st of April, and returned home on the 24th.
- 2-16. These cases except the 15th were reckoned from the commencement of Mr. Cheers's Fever.
- 1-17. Four of this family, two of them nurses, were said to have remained uninfected. But as this part of my intelligence was received in consequence of inquiries, after sixteen years had elapsed, and as one of the four (the 4th in the 1<sup>st</sup> Table) was noted by me, at the time, to have had the Fever, it is probable that some of the rest might have suffered slight symptoms of it, which escaped notice or recollection. However, I have allowed in the Table that three remained uninfected. This family received frequent visits from four relations and neighbours; yet none of them was infected; probably because none of them, during each visit, had been exposed to an infectious dose of the poison.
15. Mary Deakin was a char-woman, taken into the house on the 10th of July. Her Fever commenced on the 24th, which is the 15th day after exposure to Infection.

TABLE I. continued.

Families.	Patients.	Date when attacked.	Date when Fever began after exposure to Infection.	Infected.	Uninfected
				30	3
VI.	31. Eliz. Robinson,	March 30,		}	2 0
	32. Mary Robinson,	May 3,	35th,		
VII.	33. A. Darlington,	June 14,		}	5 0
	34. T. Darlington,	— 30,	17th,		
	35. E. Darlington, jun.	July 8,	25th,		
	36. E. Darlington, sen.	— 10,	27th,		
	37. Job Darlington,	— 22,	6th,	}	3 0
VIII.	38. Mary Hughes,	June 30,			
	39. Thomas Hughes,	July 14,	15th,		
	40. John Hughes,	— 26,	27th,	}	2 0
IX.	41. Eliz. Bithel,	— 21,			
	42. Edward Bithel,	Aug. 17,	28th,	}	5 0
X.	43. Thomas Edson,	July 19,	Not more   Not less		
	44. Jane Edson, sen.	Aug. 1,	16th, 12th,		
	45. Jane Edson, jun.	— 16,	28th, 24th,		
	46. John Edson,	— 18,	30th, 26th,		
	47. Humphrey Edson,	— 31,	31st, 27th,	}	1 0
XI.	48. Jane Parry,	July 31,	17th,		
XII.	49. J. Edwards, jun.	June 12,	5th,	}	4 0
	50. Sarah Edwards,	July 5,	24th,		
	51. H. Edwards,	Aug. 1,	51st,		
	52. J. Edwards, sen.	— 26,	76th,		
XIII.	53. Hoskinson. Son,	{ July 27, c. home 28		}	7 0
	54. ——— Mother	Aug. 23,	27th,		
	55. ——— Father	— 24,	28th,		
	56. ——— Daughter	— 24,	28th,		
	57. — Another Child	— 29,	33d,		
	58. ——— Another	Sept. 25,	60th,		
	59. ——— Another	— 31,	60th,		
				59	3

## PROOFS AND ILLUSTRATIONS.

37. Job Darlington came home into the infectious family July 17th.
43. Tho. Edson was admitted into the Chefter Infirmary on the 23d of July, which was the 5th day of his Fever. This house was particularly offensive, with a pig-stye on one side. There was no window to admit a thorough air.
48. Anne Parry became a night-nurse of the Fever Wards of the Chester Infirmary on the 7th, and was discharged on the 17th of July. Her Fever began on the 31st.
49. "J. Edwards visited a boy ill of a Fever on the 8th of June."
- 53-58. "This family were all equally exposed, as the house consisted of a very small kitchen and one room over it only, which contained two beds, in which all the family slept, and were in a most dirty wretched condition. The mother (54) died on the 11th day. The father's (55) Fever came to a crisis on the 14th day. The manner in which the first patient (53) received the Fever cannot be traced; probably from some of the neighbours who were then ill of it."

TABLE I. continued.

Families.	Patients.	Date when at- tacked.	Date when Fe- ver began after exposure to infection.	Infected.	Uninfected.
				59	3
XIV.	60. Littlemore. 1st child	Aug. 5,		}	5
	61. ——— Mother,	—— 31,	27th,		
	62. ——— 2d child,	Sept. 2,	29th,		
	63. ——— 3d child,	—— 5,	42d,		
	64. ——— 4th child,	Uncertain,		}	2
	65. ——— Father,	Not infected,			
XV.	66. Dod. Wife,	Sept. 14,	40th,	}	0
	67. ——— Husband,	Oct. 4,	21st,		
XVI.	68. Thomas Davis,	June 13,	9th,	}	18
	69. Alice Parkinson,	Aug. 1,	50th,		
	70. Joseph Walton,	—— 8,	57th,		
	71. Joseph Davies,	—— 12,	13th or 61th		
	72. Miss E. Sutton,	—— 13,	15th or 62d		
	73. S. Davies,	—— 14,	63th,		
	74. Miss B. Sutton,	Sept. 27,	46th,		
	75. Mr. Sutton,	75-85. These			
	76. Mrs. Sutton,	eleven patients			
	77. Mr. T. Sutton,	were all affect-			
	78. Mr. Jos. Sutton,	ed with Fever,			
	79. Mr. John Sutton,	but not so as to			
	80. Mr. A. Sutton,	confine them.			
	81. R. Br.	They had head			
	82. A man-servant,	ach, pain of the			
	83. Another.	limbs, thirst,			
	84. Another,	languor, &c.			
	85. Another.				
XVII.	86. Eliz. Davies,	July 4,	22d,	}	3
	87. Joseph Davies,	—— 30,	48th,		
	88. John Davies,	Aug. 14,	16th,		
				87	4



## PROOFS AND ILLUSTRATIONS.

60-65. " This family lived in a small dirty house; slept in the same room, and were all, except the father, equally exposed to Infection. He is a boatman, and seldom at home. He never slept at home during the time the family had the Fever; therefore was not sufficiently exposed."

66. " I. Dod's wife attended Littlemore's (XIV.) family from the first attack of his daughter, (60) which was the 5th of August. She communicated the Fever to her husband. They were old people, and both died on the 6th day."

XVI. 68-85. " Mr. and Mrs. Sutton, of Kinderton-Hall, with seven sons and daughters, three men and six women servants, in all 18, were infected. T. Davies (68) first brought the Fever into the family. He was at Middlewich on the 5th of June, at a house adjoining to one where some people were ill of a Fever. A. P. (69) sat up with the said patient from the first attack on the 13th of June. No. 70 was in the same room with No. 68 frequently during his illness. No. 71 was occasionally with his brother 68 from his first attack. No. 73 was often with his brother (68); also with his father, who was ill from the 30th of July. B. Sutton (74) was not exposed to 68, the utmost caution being used, but lay with her sister (72) from her first attack of Fever, Aug. 13th. She had a slight affection some time before. No. 86, the mother of No. 68, who attended him, sickened July 4th; and No. 87, the father, July 30th. Both these patients, as well as 69, were often in the kitchen, and Miss E. Sutton was often with them, so that in all probability she received Infection from 87, on the 15th day after exposure."

XVII. " Eliz. Davies, (86) mother of 68 in Mr. Sutton's family, attended him night and day from the 13th of June. She had but a slight Fever, and was not confined to her bed. J. Davies (87) attended his son (68) at Kinderton-Hall, from June 13th, at intervals, night and day. He was very ill, but still able to sit up in the kitchen. No. 88 was a child infected by his father (87) or else by P. Walton (89)."

TABLE I. continued.

Families.	Patients.	Date when at- tacked.	Date when Fe- ver began after exposure to In- fection.	Infected.	Uninfected.
XVIII.	89. P. Walton,	July 28,	—	87	4
	90. Mary Walton,	Aug. 12,	16th,	} 8	0
	91. Betty Walton,	— 20,	24th,		
	92. A child,	Sept. 28,	63d,		
	93. Another,	Doubtful,	—		
	94. Another,	Doubtful,	—		
	95. Another,	Doubtful,	—		
XIX.	96. Another,	Doubtful,	—	} 4	0
	97. R. Dod's wife,	Aug. 21,	21st,		
	98. R. Dod,	Sept. 13,	24th,		
XX.	99-100. Two Infants,	Doubtful,		} 2	1
	101. Johnson. Son,	Sept. 26,			
	102. — Mother,	Oct. 25,			
	103. — Father,	Not infected			
		Dec. 1.			
				101	5

## PROOFS AND ILLUSTRATIONS.

XVIII. " This family lived in a small but clean house. The two last were slightly affected."

XIX. 97. " Called at Walton's (XVIII.) 1st of Aug."

XX. " This family lived next door to Hoskinson's (XIII.) The wife attended and slept in the same room with her son. A small house. Father not infected on 1st Dec."

XXI. " The

TABLE II.

*Families at Middlewich, who laboured under continued  
Fever of the low putrid and petechial kind in  
1795 and 1796, attended by Mr. Taylor.*

Families.	Patients.	No. in a Family.		
			In	Uninfected.
XXI.	J. Griffith,	3	3	0
XXII.	T. Almon,	9	9	0
XXIII.	S. Limeburner,	5	3	2
XXIV.	J. Eaton,	3	3	0
XXV.	N. Postles,	8	7	1
XXVI.	T. Wolsey,	6	5	1
XXVII.	R. Siddell,	4	4	0
XXVIII.	T. Percival,	4	4	0
XXIX.	E. Authorn,	7	7	0
XXX.	J. Archer,	9	9	0
XXXI.	C. Hool,	7	7	0
XXXII.	W. Prince,	3	3	0
XXXIII.	J. Houghton,	12	3	9
XXXIV.	Mr. Pott, <i>Cotton-Hall</i> ,	16	15	1

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183 19



## PROOFS AND ILLUSTRATIONS.

- XXI. "The Fever was petechial, in a lodging-house, small, close, and dirty."
- XXII. "The whole family lay in the same room. The house was close and filthy. No change of linen. A bad nurse."
- XXIII. "Next door to the above house. Not certain whether the children were slightly affected with the Fever. If they were, it was imperceptible by the mother."
- XXIV. "Eaton's wife attended Almon's family:" XXII.
- XXV. "Small close house. All lay in the same room. The one exempted lay with the others, and was never heard or observed to be affected."
- XXVI. "T. Wolsey is a boatman; slept at home only once or twice with his wife, who was only very slightly affected. The rest of the family were very ill. A very small dirty house; a few doors from XXV."
- XXVII. "The next door to XXVI.; was small and dirty."
- XXVIII. "A few doors from XXVII. Husband and wife slightly affected."
- XXIX. "Opposite to XXVIII. All slept in one room. All slightly affected."
- XXX. "A remarkable filthy house and filthy family; caught the Fever at Macclesfield. The father was the only one who had the Fever slightly; says he was very ill one day with head-ach and pain of his limbs. Very poor."
- XXXI. "Very poor. A remarkable filthy small house."
- XXXII. "Mother of W. Prince; caught the Fever from him and died."
- XXXIII. "A cotton factory, which employs several hands besides these twelve, who sleep in the house. Several rooms. In this family the utmost caution was used to prevent the spreading of the Infection, by ablution of the face and hands of the sick persons with warm vinegar, frequent changes of linen, white-washing the walls; washing the floors; burning pitch; sprinkling vinegar; frequent ventilation; removal of the chamber-pots, and every thing that could tend to accumulate the infectious vapour."
- XXXIV. "The one exempted was a child four months old, on the breast, while the mother was ill. The utmost pains were taken to prevent the spreading of the Fever."

TABLE III.

*Days when Fever commenced, after exposure to Infection, in Seventy-Two Cases, arranged out of the first Table.*

Day.	Cases.	Total.	Day.	Cases.	Total.
1st	22?	1?	33d	24, 57	2
5th	49	1	35th	32	1
6th	37	1	37th	6, 7, 8, 9, 10, 11, 12	7
9th	68	1	40th	66	1
13th	71?	1?	42d	63	1
15th	15, 39, 72?	3	44th	13	1
16th	44, 88, 90	3	46th	74	1
17th	34, 47	2	48th	14, 87	2
21st	67, 97	2	50th	69	1
22d	86	1	51st	51	1
23d	2, 17, 3	3	56th	25	1
24th	50, 91, 93	3	57th	70	1
25th	22, 23, 25	3	58th	26	1
26th	19, 20	2	60th	27, 58	2
27th	21, 36, 40, 54, 61	5	61st	71?	1?
28th	42, 45, 55, 56	4	62d	72?	1?
29th	1, 62	2	63d	16, 28, 73, 92	4
30th	3, 4, 5, 46, 102	5	66th	59	1
31st	47	1	76th	52	1
		44			31
					44

Out of 202, the whole number of persons stated in the I<sup>st</sup> Table, only 19 escaped Infection. But it is manifest, from the circumstances related in the explanatory notes, annexed to the Table, that, in the three following families, several individuals were not sufficiently exposed to the poison.

Families.	Persons not sufficiently exposed.	Not infected.
XIV.	— 1	— 1
XXVI.	— 1	— 1
XXXIII.	— 12	— 9
	<hr/> 14	<hr/> 11

Therefore, from 202 should be subtracted 14, and there will remain 188, the number exposed. And from 19 should be subtracted 11; then 8 will remain, the number who escaped Infection. Eight in 188 is less than *one in twenty-three*.

If, in like manner, we deduct the whole first family consisting of 20 persons,

as

as there were some doubts whether they were all sufficiently exposed, and whether 3 of them entirely escaped the Fever; then there will remain only 5 uninfected out of 168 exposed to Infection, or less than *one in thirty-three*.

Though an induction from facts never amounts to a demonstrative proof, yet the farther it is carried it approaches the nearer towards a complete discovery of the laws of nature. The cases here adduced are sufficiently numerous to establish a pretty accurate conclusion. They clearly prove that a very large proportion of mankind are susceptible of infectious Fevers. It hence appears that as many persons are liable to receive the Typhous as the Variolous Contagion, and probably more, even if the persons who have had the Small-Pox be excluded from the comparison; and, in a far greater number, if we take into consideration  
that



that the latter Distemper can only be suffered once, but the former an indefinite number of times.

The truth of this proposition being fully proved, deductions from it may be received with confidence. Upon this foundation, it may fairly be argued in what circumstances febrile Infection is communicated, and where there is perfect safety from danger. Though the exact line between hazard and security might be drawn with some uncertainty, yet at any distance, upon each side of it, we can speak with decisive confidence.

Clear Con-  
clusions de-  
ducible from  
these Facts.

The same mode of reasoning as was successfully employed in the *INQUIRY how to prevent the Small-Pox*, may be equally applicable to the present question. It was there calculated, upon the *datum*, that only 1 person in 20 is naturally exempted from the Distemper; that if two together have escaped, the probability

D

that

that they were never both exposed to an infectious quantity of the poison is above 400 to 1; if three in a family have escaped above 8000 to 1.\*

The truth and accuracy of this calculation have been warranted by subsequent experience, as explained in the *SKETCH of a Plan to exterminate the Small-Pox*, p. 536, 7, 8, and 9. The conclusion therein-stated, as the result of general observation, by my medical correspondents, as well as by my own, is comprehended in these words. “Therefore when three or more persons, together, have escaped the Small-Pox, we are warranted to infer, upon evidence of high authority, that all of them have not been exposed to the Contagion.”

It is too obvious to require a remark, that this mode of reasoning is as ap-

\* This mode of reasoning is fully explained in the *INQUIRY*, (p. 24—31) which pages the reader ought to peruse and attentively consider.

plicable,

plicable, and on clearly convincing evidence, to the Typhous, as to the Variolous Infection; whether the proportion naturally exempted from the former Distemper be 1 in 23, or 1 in 33.

If all the cases in succession, where persons have breathed the air of a chamber of a patient ill of a contagious Fever, and yet have escaped Infection, were estimated in this mode of calculation, the chances would be not only of thousands but of millions, indeed *many millions*, to one, that such persons had not been exposed to an infectious dose of the poison. But facts of this kind are so generally known and so frequently fall under the observation of every medical visitor, that no calculation can be required to establish this truth. The conclusions are sufficiently obvious to common sense.

By the assistance of these preliminary principles we are well prepared to in-

What dose  
of Typhous  
Poison in-  
fectious.

quire

quire what dose of the Typhous poison is required to produce Infection. The quantity will undoubtedly vary according to different circumstances, but we shall be enabled to judge with some accuracy, what are the limits of this variation.

In this whole investigation, you will, I am certain, keep in mind one medical truth, it cannot be called a theory, a term often applied to doubtful disquisitions. The larger the dose of a poison or drug, the greater in general is the effect which it produces. Many of the most powerful and salutary medicines, when taken in too large a quantity, are poisons, as, opium, antimony, mercury, hemlock, aconite, foxglove, &c. Even arsenic itself, the most virulent and unmanageable of all poisons, by the skill and attention of physicians, has been reclaimed from the class of mischievous substances, and by a diminution of the dose is held, on good authority, to be a safe and useful remedy.



On this subject, a farther analogy ought to be taken into consideration. In different constitutions, and in different indispositions, there is a certain degree of variety in the operation of any drug; in some more than others. Few drugs are so uncertain in their effects as antimony; four or six times the dose of it may be required for one patient more than for another, or for the same person in different diseases. In most other medicines and poisons, the difference between the least and greatest operating dose is much less than what is here stated. The mischievous quantity of infectious miasms, as might be expected, from the analogy here explained, admits of some degree of variation. They propagate the Small-Pox, however, with much uniformity, as has been proved in the INQUIRY and the SKETCH. It is not improbable that debility, or indisposition, or fear, or exposure  
to

to cold or fatigue, or, as some suppose, a difference of diet, may occasion greater variety in the quantity of poisonous miasms requisite to produce an infectious Fever than the Small-Pox. In these peculiar circumstances, a sufficient, which can only be a small, allowance may be made for the difference, without much difficulty.

The Ty-  
phus not  
infectious  
in a clear,  
large, airy  
room.

With the facts recorded in the I<sup>st</sup> Table and these remarks in our view, let us proceed to contrast them with other facts of general notoriety which have fallen under my own observation, and, in incomparably greater numbers, have been witnessed by other practitioners. When the chamber of a patient ill of an infectious Fever is spacious, airy and clean, few or none even of the most intimate attendants will catch the Distemper. Among the middle and higher ranks of society in Chester and its neighbourhood, during a period of 31 years, I scarcely recollect a single instance  
of

of the Typhous Fever being communicated to a second person, not even during the epidemics of 1783 and 1786, which excited a general alarm in that city. Fresh air and cleanliness were the only means which I employed to prevent Infection. Doors and windows were kept open as far as the season and other circumstances would permit. Curtains were drawn to exclude light, but not the free circulation of air. All clothes, utensils, &c. used by the patient, were immersed in a vessel of cold water immediately, and when taken out of it carefully washed. The floors were kept clean, and vinegar was sometimes but not always employed to sprinkle them. It was thought to be more easy and more safe to remove than to correct the poison.

The performance of these regulations, was required with great punctuality.

They

They were found to be fully adequate to the purpose.

Infection  
seldom soon  
caught even  
from the con-  
centrated im-  
pregnation of  
the air.

Again, medical practitioners are exposed to still more imminent danger. They visit patients ill of infectious Fevers, even in small, close, and dirty apartments. Sometimes, indeed, they unfortunately suffer: but many thousands of such visits escape without injury, for one instance of Infection. During four years attendance in the hospitals of Edinburgh and London, and afterwards during thirty-one years in private practice in Chester,\* and fourteen years and a half in the Chester Infirmary, and three years at Bath, I have been in the habit of breathing air strongly impregnated with the infectious miasms of Fever. In many, very many instances, I have visited patients ill of infectious Fevers in small, close, and dirty rooms; yet never but

\* Till 1783 infectious Fevers were excluded from the Chester Infirmary. once,



ence, above thirty years ago, had a Fever. Your physicians of the Manchester Infirmary for many years, and particularly during the late widely-spreading epidemics, in your large and populous town, have, with great fortitude and humanity, constantly visited the home patients, that is, they have, in innumerable instances, breathed the most pestilential air, in the most concentrated state. Their and my safety manifestly proceeded from this circumstance; we remained but a short time in the patient's room. We did not respire an infectious dose of the poison.

Hence it appears, that air strongly impregnated with infectious miasms may be breathed for a short time, and air weakly impregnated for a long time, without any injury. We might hence be led to believe, that the poisonous miasms do not generate a Fever, till they have been respired without interruption, for several days

days together. And it is not improbable that, in some persons, such an accumulated quantity of the poison may be required.

Yet Infection  
is sometimes  
suddenly  
caught.

But, on the contrary, other facts manifestly prove, that a short exposure to a pestilential atmosphere can, in some instances, produce a Fever. The case of Mr. Cheers (I<sup>st</sup> family) is manifestly of this kind. In a few days he visited different towns and several old acquaintance, and consequently could not have remained long together in any particular situation. The numerous examples of Infection being caught by medical visitors, in the chambers of their patients, although they seldom remain for half an hour,, and generally for a much less space of time, in the pestilential atmosphere, manifestly prove, that a short and probably a momentary exposure to the Contagion, in some instances, excites a Fever. Two of  
my

my patients, who were physicians, ascribed their Infection to a short exposure to the poison. One of them thought, that he caught the Fever by creeping behind, in order to assist, his patient; the other by inspecting morbid fæces.

Some have imagined, that medical persons are less liable to be affected with the infectious poison than others, because they are more frequently accustomed to breath a certain portion of it. But this argument is carried much farther than analogy will warrant. Take an example where the efficacy of a drug is most remarkably diminished by long and frequent use. Opium, perhaps more than any other medicine, requires a gradually-increasing dose, to produce the same effect. But, if opiates are omitted, even for a short interval, the patient, on the recommencement of their use, perceives the ordinary effect from the ordinary quantity

Medical, not less than other visitors, liable to infection.

quantity. Whereas medical men are never constantly in the habit of breathing pestilential air, nor is the dose of it gradually increased. Consequently, after a short interval of time, during which they cease to breathe poisonous miasms, they become as susceptible of mischief from the poison as any other person.

Prisoners  
less liable to  
Infection.

But prisoners, confined in the pestilential vapour of a jail, are in a situation totally different. The quantity of poison which they breathe may gradually increase, and by this means, they are enabled to bear, with impunity, a much longer dose of it than others. Thus it is a well-known fact, that felons have worn clothes without injury which nevertheless communicated Infection to fresh persons in a court of justice.

The poison  
is infectious  
at a greater  
distance in  
air vitiated  
by respira-  
tion.

Another view of the subject deserves consideration. It is generally allowed, that putrid Fevers are *generated* by a great number



number of persons crowded together into the same room, as in a ship, jail, &c. probably from some depravation or corruption of the air by respiration. To this cause we may probably ascribe some events, which might otherwise seem to be exceptions to the preceding observations. Several instances have been recorded, where Infection was communicated, in crowded courts of justice, at a greater distance from the poison, than in the cases above related, as what is the uniform result of my own observations. May not this difference be fairly ascribed to air vitiated by a crowd of people? It is well known, that a court of justice is always a very spacious apartment, and that the doors and windows in it are generally open for the admission of fresh air. It is directly contrary to what happens in a private apartment, that so many persons and at so great a distance from the

the

the poison in a large and well-ventilated room, should be infected together. I am warranted to make this observation by the uniform testimony of all my own experience, for a long series of years, during which I have carefully attended to this question. And the testimony of my medical brethren will fully confirm this remark with perhaps some apparent exceptions, which may be explained upon the principles here advanced.

It may be a subject of consideration, whether the mischief produced by the Contagion of prisoners in a court of justice may not be ascribed to the increase of malignity in the febrile poison when it has long lodged and putrified in dirty clothes and confined air in a state usually denominated *Fomites*.

Whether the causes above assigned, or what other cause may have produced the difference, it might be difficult absolutely  
to

to determine by satisfactory proofs. But it appears evident that these famous examples are not conformable to the law usually observed by nature in the propagation of this poison, but that they are exceptions to the law, for some local reason.

To the same cause I am disposed to attribute another very interesting and well-authenticated fact. From a letter of Mr. W. Henry, printed in the Manchester Chronicle in June 1796, and from other information, it appears that medical students who attend the Fever patients in the Edinburgh Infirmary, have sometimes unfortunately caught the Infection. In such large and well-ventilated apartments it cannot be apprehended that an infectious Fever could be communicated, unless, as in this case, when the students are “very numerous, and constantly crowd around the beds of the patients afflicted with

with Fevers.” Two causes of Fever appear to be here combined. The air is vitiated both by respiration, and by febrile miasms. Some might ascribe the calamity which has been produced in courts of justice to the supposed greater malignity of pestilential *Fomites*, heightened by the putrefaction of a jail. But in the wards of an Infirmary, where the strictest attention to cleanliness is known to be observed, no such *Fomites* can possibly be suspected.

The Various Poison  
infectious  
at a greater  
distance  
than the  
Typhous.

The whole evidence which I have been able to collect incontestibly leads to this very important conclusion, that febrile Infection extends but to a very narrow sphere from the poison. It was upon this solid foundation that I ventured originally to propose the reception of patients ill of infectious Fevers, into wards appropriated to the purpose in the Chester Infirmary. The uniform success of this establishment



fully warranted my repeated recommendations of like regulations to check the fatal progress of Fevers at Manchester, particularly in answer to your inquiry relative to this subject in Dec. 1795.\* You

\* In a letter to me from Dr. PERCIVAL, dated Dec. 30th, 1795, there is the following paragraph. "We have this afternoon had a meeting at my house, to consider of the best means of stopping the progress of the low Fever now so prevalent in Manchester and the small towns in the neighbourhood. It has been agreed to call together some of the most intelligent persons of this place, and to propose to them the formation of a BOARD of HEALTH on a general and comprehensive plan. Permit me to request, that you will weigh this interesting subject in your mind, and that you will furnish me with your observations upon it in time for communication to the gentlemen when they assemble on Thursday the 7th of January."

The following is an extract from my answer, of which the chief part was published in the Manchester Newspapers, and in the first Report of the BOARD of HEALTH.

To Dr. PERCIVAL.

*"Chester, Jan. 6th, 1796.*

"YOU may remember that, for the last twelve years, we have received all infectious Fever patients who require assistance, into two Fever Wards, one for each sex, appropriated to this purpose, in the Chester Infirmary.

will recollect that, upon this very interesting occasion, I assured you that the pernicious atmosphere of infectious Fevers was limited to a much narrower extent than even that of the Small-Pox.

Infirmary. This institution arose from the speculations on the nature of Contagion, which, you know, had engaged much of my attention. Numerous facts having proved, that a person liable to receive the Small-Pox was not infected by a patient in the Distemper, when placed at a very little distance; I next considered the nature of the Contagion which produces putrid Fevers. I soon discovered, that their infectious atmosphere was limited to a *much narrower* extent than even that of the Small-Pox. I observed, that in a clean, well-aired room, of a moderate size, the contagious poison is so much diluted with fresh air as very rarely to produce the Distemper, even in nurses exposed to all the putrid miasms of the breath, perspiration, and other discharges. Whereas, in the close, dirty, and small rooms of the poor, the whole family, in general, catch the Fever. On these considerations I ventured to propose the admission of Typhous Fevers into the attack story, on one side of our Infirmary, to be separated into two wards. From the experience of TWELVE YEARS I am warranted to maintain the *safety* of this measure, if conducted under very easy practicable regulations. During this period, it never was *suspected* that Infection has been communicated to a *single patient* in other parts of the House.

“ Farther,

My Friend knows me too well to suspect that I should advance such an assurance upon doubtful authority. But in order to discern the full force of this remark, it is proper to consider, in what

“Farther, I maintain that an establishment of this kind is indispensibly necessary in all Infirmarys to preserve them from what is called the Hospital Fever. You may remember that I have collected a considerable number of cases to prove that febrile Contagion, in some instances, remains in the body for many days, and even weeks, in a *latent* state, before the symptoms of Fever commence. Patients ill of other disorders are admitted into the Infirmary, from infectious houses, where they have caught the Distemper. The Fever begins *after* their admission, and frequently infects others in the same ward; when there is not a due attention to fresh air and cleanliness; or when several patients, thus previously infected, are admitted into the same ward. But in the Chester Infirmary, every Fever patient, as soon as observed, is immediately removed into the Fever Wards; so as to preserve all the rest of the House perfectly free from Contagion.

“During the war, Chester has been unusually exposed to the danger of putrid infectious Fevers. Many new-raised regiments, coming from Ireland with numerous recruits taken out of jails, remained in Chester for a few weeks after their voyage. Great numbers of these soldiers, and their wives, were ill of putrid Fevers, and were immediately received into the Fever Wards of  
our

circumstances, and at what distance from the poison, the Infection is communicated in each of these Distempers. One case is recorded in the INQUIRY, (p. 97) where the Infection of the Small-Pox was caught at Chester from a patient passing in the

our Infirmary. If such contagious patients had been distributed in the small publick houses and poor lodging houses through the city, the consequences to many of our inhabitants must have been dreadful.

“ By taking out of a house the first person who sickens of a Fever, we preserve the rest of the family from Infection, together with many of their neighbours, who would otherwise catch it. At this very time, when the inhabitants of Manchester, and of many other places, are afflicted with a fatal contagious Epidemick, only two patients are in our Fever Wards, and both convalescent: and the Apothecary to the Infirmary, who attends the out-poor of the whole city, informs me, that he has *not a single* Fever patient under his care.

“ To one of your superior discernment, it would be superfluous to say, that the observations above advanced are founded upon such numerous facts, that they must give conviction to every impartial inquirer, not only of the *safety* but of the *efficacy* of the proposed regulations. I am confident that our two Fever Wards do ten times more real good in the prevention of misery and the preservation of life, than all the other parts of the Infirmary.”

open



open air upon the walls, and another (p. 32) in the rows, a kind of covered gallery, open on one side to the air.

It appears to be highly improbable that the Typhous Infection should ever be communicated, in the open air, by the common intercourse of society: because visitors, and even attendants, with very few exceptions, escape the Fever, when exposed to it in even the same chamber, if clean, airy, and spacious. The quantity of miasms respired in the latter is incomparably more than it can be in the former situation. It is not, however, intended to be asserted that such an event is impossible, if a person on purpose, or by some rare accident, were to breathe the air which immediately issues from a patient, or from clothes fully impregnated with the poison. During my long attention to this inquiry, not a single instance ever occurred to prove that  
persons

persons liable to the Small-Pox could associate in the same chamber with a patient in the Distemper without receiving the Infection.

Clothes exposed to Typhous Miasms not infectious.

Another question upon this subject ought to be investigated. Is it to be apprehended that the clothes of visitors, &c. exposed to febrile miasms, can acquire a pestilential quality so as to communicate Infection? I answer decidedly in the negative, and for all the reasons given in the INQUIRY, p. 67, 86; and in the SKETCH, p. 217, 369, 384, 386, 404, 542. If the arguments against such an opinion in regard to the Small-Pox be not fresh in your memory, I must request you to take the trouble, upon this occasion, to peruse with attention the passages above quoted. The proofs which refute any such idea in regard to the Small-Pox, apply much more forcibly to infectious Fevers; because a much larger dose of  
air,

air, and more fully impregnated with the latter than with the former poison, is required to produce the pernicious effect. The clothes, &c. of medical and other visitors, exposed to febrile miasms, excite false and injurious alarms, which truth and the interests of mankind require to be refuted.

We have no certain knowledge in what manner infectious Fevers are received into the body. According to the most plausible conjecture, they appear to be communicated by poisonous vapours which issue from the breath, or the insensible perspiration or the excretions of a patient in the Distemper. These miasms are probably taken into the body by the absorbents of the mouth, nostrils, lungs, stomach, or skin.

Every chemist must be convinced, that the insensible perspiration is dissolved in the air, because it is insensible. And the vapour

Typhous Miasms invisible.

vapour which arises from respiration is also dissolved, except when made visible by cold air. No one can doubt that the breath of animals discharges as much moisture when the air is warm as when it is cold. And the loss of weight more than can be accounted for by all sensible evacuations, as discovered by the celebrated Sanctorius, and confirmed by others who have repeated his experiments, clearly proves that there is a constant emanation of vapour from the surface of the human body. If a patient in an infectious Fever had emitted a *visible* vapour, so remarkable a circumstance must, for ages past, have been noticed by every medical visitor. The fact being admitted that the infectious miasms are invisible, it is chemically demonstrable that this poisonous vapour is united with air by solution. Disprove the fact, or admit the conclusion. For it is maintained that no

two



two substances do, in any instance whatever, exist together, in a perfectly pellucid state, unless they are chemically united with each other. It is the invisibility of the poison which renders it dangerous; if seen, mankind would soon be taught to avoid the pestilential vapour.

In a medical as well as philosophical light, it is an important question whether the febrile miasms are merely diffused in air, or whether they are united to it by solution. I maintain the latter opinion, not hypothetically, but from theory founded on the facts here stated. The general doctrine indeed which I wish to establish would not be invalidated on either supposition. But some important conclusions may be deduced from an accurate investigation of this question. If the febrile miasms be dissolved in air, and attracted from it by clothes, they could not, in the same circumstances, on any known

known principle, be again attracted from clothes by air. This would be contrary to the law of elective attraction, which is as well founded as any in natural philosophy. Again, when a menstruum dissolves any substance, and is sufficiently agitated, every particle of it is equally impregnated.—But, let this theory be determined how it may, the principles laid down in this letter do not rest upon it, but upon the evidence of numerous facts carefully and faithfully ascertained.

Typhous  
Contagion  
dangerous at  
a greater dis-  
tance than  
fermenting  
liquor or fire.

Having employed some pages in an attempt to refute what appear to be false alarms, and to remove imaginary difficulties, in the prevention of epidemical Fevers, I wish now to draw your attention to some opposite, but full as dangerous errors. In France, Germany, and other enlightened parts of the continent of Europe, an opinion has very generally prevailed, that infectious Fevers, the  
Small-

Small-Pox, and even the Plague, are never caught, except by contact of the patient or poison. However, as this erroneous notion has never been generally adopted, and at most has only prevailed in a local and temporary manner in Great-Britain, it will not be worth while to engage any of your time in its refutation.\* But there is another theoretical opinion delivered on the credit of a physician, whose memory I shall ever hold in the highest reverence, which appears to be so erroneous and so dangerous as to require a full refutation. Fortunately, this can be accomplished in a satisfactory manner, in a few lines.

I received the following intelligence from undoubted authority. A celebrated Professor, ‘when treating upon the  
‘cause of Fever, in his Lectures on the  
‘practice of medicine, expressed himself

\* The reader, who may wish to consider this point more fully, is referred to the SKETCH, p. 93—100.

“ in the following manner:” “ Contagion  
“ is a matter always deriving its origin  
“ from the human body. It has been  
“ imagined that Contagions are widely  
“ diffused in the atmosphere, but it has  
“ been proved that, when they are dif-  
“ fused, and at a distance from their  
“ source, they are rendered harmless.  
“ This is similar to vapours of fermenting  
“ liquors, and of fire, which, near to their  
“ source, are destructive of animal life,  
“ but, at a small distance, become inno-  
“ cent, either by mixture or diffusion.  
“ This appears to be the case in Conta-  
“ gions.”

To refute this very dangerous and erroneous doctrine, it will be sufficient to remark that, in a small, close, dirty room, neither a common fire, nor the fermentation of beer, has any fatal, or even a pernicious effect. Whereas, in a situation exactly similar, the febrile poison  
infects



infects all who are exposed to it, except about 1 in 23, or a still less proportion.

As neither a common fire, nor fermenting liquor, could have any injurious effect in the wards of a hospital, this theory unfortunately confirms the pernicious practice of some places, where infectious Fevers are admitted, and indiscriminately mixed with patients ill of other diseases.

In candour it should be observed, that the Professor's doctrine which has been thus freely discussed, was contained in an abstract of a Lecture taken as it was delivered. Though the pupil who wrote it is a very intelligent physician, it is not improbable that some explanation, such as the following, might be omitted in his notes. The Professor might, as he certainly ought to, have said, " I adduce the examples of fire  
" and fermenting liquors as a vague and  
" remote analogy, not as a literal illustration

“tion of the nature of Contagion. If you  
 “mistake my meaning and act upon it  
 “in a strict sense, fatal mischief might be  
 “the consequence. In an affair of so  
 “much importance, I cannot leave a  
 “doubt upon your mind whether my  
 “meaning be literal or metaphorical.”

How early  
 is a Typhous  
 Fever infec-  
 tious.

In an investigation of the nature of Typhous Contagion, it is necessary to inquire how early after its commencement the Fever becomes infectious.

In the X<sup>th</sup> family of the I<sup>st</sup> Table, it is noted that Edson's Fever began on the 19th of July.\* He was taken out of his own house into the Chester Infirmary on the 23d, which was the 5th day of his Fever. His wife and children all seem to have caught the Infection before his departure. Upon this point, from an unfortunate accident, my information is much less complete than might be wished. To ascertain on what day of a Fever the

\* See p. 232.

infectious

infectious quality begins, I had collected some important facts. But the person who had communicated to me this interesting intelligence, inadvertently burned the papers, which I had returned to him with questions and remarks, in order to obtain such explanations and illustrations as were required to discover the law that nature follows in the propagation of this poison.

On this point, I have made some farther inquiry, but have not yet received answers to my questions. The establishments of Fever Wards at Chester, Manchester, Liverpool, &c. will afford excellent opportunities to ascertain at what period of the Fever its infectious quality commences, by an induction of facts similar to what is related concerning Edson. Let the day of the Fever, and of the patient's removal to the Infirmary, be dated, and when the house was cleansed: then note whether the remaining individuals  
of

of the family were attacked by the Fever, and on what days the first symptoms commenced.

Latent pe-  
riod of Ty-  
phous In-  
fection.

From the time when a person receives the Infection till the commencement of Fever, the poison remains in a *latent* state. It is, I believe, a common opinion, that Fevers frequently begin immediately after exposure to Contagion, without the intervention of any latent period whatever. But out of the seventy-two cases here collected, it was not suspected, except in one single instance, that the Fever began immediately from the time when the Infection was caught. And probably the belief of this solitary example proceeded merely from fear and imagination, as the woman's real illness (Table I<sup>st</sup>, Case 22<sup>d</sup>) was not manifest before the 25th day after exposure to Infection. Till this period she performed her usual labour, a sufficient proof, or at least a strong presumption, that she had previously no Fever.



However, as I am always solicitous to state evidence fairly and candidly on both sides the question, it is proper to mention that, some years ago, I had two patients, who believed themselves affected with Fever immediately from the time when they had caught the Infection. They were both eminently capable of forming an accurate opinion on this subject, being two physicians highly distinguished for their habits of observation and sagacity. Their characters are generally known, and greatly respected by the medical world. The former instance was that tedious Fever of our friend Dr. DOBSON, in which you know I attended him at Liverpool, in September and October 1779. The other you will recollect to be your own case, in which I visited you at Manchester in October 1783. However, with all my deference for the opinion of such accomplished judges, and in their own

F

cases,

cases, yet it is proper to remark that physicians, frequently in the habit of visiting patients ill of infectious Fevers, might previously and unconsciously have caught the Contagion. No one supposes that either the casual or inoculated Small-Pox ever commences immediately on exposure to Infection: the Variolous Fever is *always* preceded by a latent period.

On examination of the III<sup>d</sup> Table it appears that out of seventy-two cases the latent period of the *Typhus* (allowing four\* days of Fever before the patient becomes infectious) was less than ten days in only five, or probably in only three cases: that it was less than seventeen days in only eleven or thirteen: that it fell upon some of the days between the 17th and 33d day in forty-one, which is considerably more than half the cases.

\* See Table I<sup>st</sup>, Family X<sup>th</sup>.

It may be suspected that the remaining sixteen patients who did not sicken, till a still longer period had elapsed, might not be early and sufficiently exposed to the Contagion. For this reason, it will be proper to specify particularly the circumstances of each case, as explained in the notes on the Tables. From each of the following numbers the period of four days is in like manner subtracted.

Cases.	Day on which Fever began after exposure.	PROOFS AND ILLUSTRATIONS:
13th ... 40th	}	Were patients in large farm-houses, and the closeness of intercourse with the patient is not stated.
14th ... 44th		
87th ... 44th	}	In farm-houses; but these patients had previously attended infectious cases both night and day so as to be fully exposed to them.
69th ... 46th		
70th ... 53d		
73d ... 59th		
63d ... 38th	}	The exposure, in all these cases, is fully explained to be as much as possible, either in small dirty cottages, or by lying in the same bed with the patient.
51st ... 47th		
25th ... 52d		
26th ... 54th		
27th ... 56th		
28th ... 59th		
59th ... 64th		
52d ... 72d		

The 13th and 14th cases first came under my own observation. The 25th,  
26th,

26th, 27th, and 28th, were witnessed both by Mr. CONNAH and myself. The 52d was visited by Mr. MANNING; and the remainder, which were nine, by Mr. TAYLOR. So that you have the united testimony of four witnesses to prove what may appear to be extraordinary facts, a caution which I know you will approve.

On the whole, it appears, that the *latent period* of Infection varies from a few days to two months. Indeed, the number of examples which occurred under ten days, are so few as to occasion some doubt whether those patients might not have received some previous but unobserved Infection.\*

\* "At the Old Bailey, in April 1750, in a crowded Court and weather hotter than usual, within a week or ten days at most, many people present at Clerk's trial were seized with a Fever of the malignant kind; and few who were seized recovered. In less than six weeks time the Fever entirely ceased."—Foster on the Crown Law, p. 74.

This statement differs a little from my observations. But the report is not given by a medical author, nor is the latent period of each case separately dated. Besides,

Fever



It is proper to remark, that from the number of days stated in the Tables, to denote the time between the commencement of the first and succeeding cases of Fever in the same family, there should be deducted four days, the period between the beginning of the Fever and the time when it becomes infectious, in order to determine with precision for what number of days the poison remained in a *latent state*.

To many, the various minute details I have thought necessary to give in the investigation of these different questions, may be thought tedious and irksome; but to you, who are fully aware how highly important it is to ascertain, with accuracy, all the properties of a poison alone so extensively fatal to mankind, the description of every little circumstance in such a manner as to remove all doubts, will

Opinions  
vague and  
erroneous.

Fevers arising partly from air vitiated by respiration in a crowded room, may have a shorter *latent* period, than Fevers produced from mere Typhous poison alone.

afford

afford satisfaction. You very well know how vaguely these things have been considered. Opinions have been formed upon the authority of respectable names, without knowing what facts support those opinions. Some have entertained alarming apprehensions that patients in infectious Fever, if placed near the centre of an area of 38,000\* square yards, might communicate the Distemper to the inhabitants of the surrounding

\* See the Manchester Gazette, April 10th, 1796.

#### “ BOARD OF HEALTH.

“ At a General Meeting held this day at the Bridgwater Arms, T. B. BAYLEY, esq; in the Chair; the following Resolutions were unanimously agreed on:—

“ V. That the House of Recovery is situated on an area, including more than THIRTY-EIGHT THOUSAND square yards, unoccupied by any other buildings, except those appertaining to the Infirmary.

“ VI. That the Board have the fullest evidence, from WELL-AUTHENTICATED FACTS, and LONG EXPERIENCE, at Chester, that an asylum for Fever patients may be so conducted, as to be perfectly innoxious to the inhabitants in its vicinity.

“ VII. That, impressed with a conviction of these truths, the Board has observed, with surprize and concern,

houses. Others, on the contrary, are so little aware of the pernicious effects of this Contagion as to admit infectious Fevers into the same wards of a Hospital with other patients. Both these opinions have been maintained by men of superior understandings; yet both are erroneous; both are highly injurious. Hence appear the propriety and utility of stating, in detail, a sufficient number of cases, that the reader may form his own opinion, and see upon what foundation his conclusions are supported.

cern, the alarm which has been taken at so important, so salutary, and, as they believe, so unexceptionable, a part of their undertaking. Yet, sensible, of the force and diffusive nature of fear, even though unfounded, and paying due attention to the feelings, as well as to the opinions, of many respectable fellow-citizens, they are willing, from *motives of conciliation*, to relinquish the present situation of the House of Recovery, whenever another more eligible shall be provided."

## II. PRAC-

## II.

## PRACTICAL CONCLUSIONS.

I<sup>st</sup>.

Rules to pre-  
vent Infect-  
ion.

*Medical, clerical, and other visitors of patients in infectious Fevers, may fully perform their important duties with safety to themselves.*

This proposition I cannot better illustrate than by inserting the following directions, which I communicated some time ago to THOMAS BARNARD, esq; a man whose superior understanding and beneficent disposition are generally known. At his request they were published by the “Society for Bettering the Condition of the Poor,” with a view to their being distributed, so that a printed copy may be put up in every house where there is an infectious Fever.\*

\* Any number of printed copies of these RULES of Prevention, may be had of the Bookseller of this Society, HATCHARD in Piccadilly.

“ It



“ It may be proper previously to observe, that this febrile poison, in a small, close, and dirty room, infects a very great proportion of mankind; not less than 22 out of 23, or a still higher proportion; but in a large, airy, clean apartment, even putrid Fevers are seldom or never infectious. When this poisonous vapour is much diluted with fresh air, it is not noxious.—From a large collection, and an attentive consideration, of facts relative to this Distemper, have been formed the following

## RULES TO PREVENT INFECTIOUS FEVERS.

“ 1. *As safety from danger entirely depends on cleanliness and fresh air, the chamber door of a patient ill of an infectious Fever, especially in the habitations of the poor, should never be shut; a window in*  
*it*

*it ought to be generally open during the day, and frequently in the night. Such regulations would be highly useful, both to the patient and nurses; but are particularly important, previous to the arrival of any visitor.*

*“ 2. The bed-curtains should never be close drawn round the patient: but only on the side next the light, so as to shade the face.*

*“ 3. Dirty clothes, utensils, &c. should be frequently changed, immediately immersed in cold water, and washed clean when taken out of it.*

*“ 4. All discharges from the patient should be instantly removed. The floor near the patient's bed should be rubbed clean every day with a wet mop, or cloth.*

*“ 5. The air in a sick room has, at the same time, a more infectious quality in some parts of it than in others. Visitors and attendants should avoid the current of  
the*

*the patient's breath,—the air which ascends from his body, especially if the bed-curtains be closed,—and the vapour arising from all evacuations. When medical or other duties require a visitor or nurse to be placed in these situations of danger, Infection may be frequently prevented by a temporary suspension of respiration.*

*“ 6. Visitors should not go into an infectious chamber with an empty stomach; and, in doubtful circumstances, on coming out, they should blow from the nose, and spit from the mouth, any infectious poison, which may have been drawn in by the breath, and may adhere to those passages.”*

II<sup>d</sup> PRACTICAL CONCLUSION.

*In any house, with spacious apartments, the whole family, even the nurses of a patient ill of a typhous Fever, may be preserved from Infection.*

Infection not  
caught in  
large, airy,  
and clean  
apartments.

The truth of this proposition chiefly rests upon the faith of my own experience, fully related in the preceding pages, which need not be repeated.

No additional instructions are required to preserve the attendants from Infection: even when the wife, mother, or daughter, is the nurse, and extreme anxiety of mind is added to the other causes of Fever. To them, a rigid observance of the rules of cleanliness and ventilation is particularly important. One caution, however, though of a different kind, may be useful. A nurse should never sleep, nor even sit in a current of air, between an open door and window of the sick chamber.

I am



I am well aware that in the most commodious houses, and under the care of the most eminent physicians, the typhous Fever is frequently suffered to spread through a part, or even the whole, of a numerous family. I speak from authentic testimony. By mentioning these facts, I do not mean, however, to impute any peculiar blame to individuals, either for want of knowledge or attention. Such calamities manifestly proceed from general ignorance on the subject. The nature of this poison has never been completely investigated. It has never been proved by what easy methods the Contagion may be avoided.

### III<sup>d</sup> PRACTICAL

III<sup>d</sup> PRACTICAL CONCLUSION.

*Schools may be preserved from febrile  
Infection.*

Schools may  
be preserved  
from infect-  
ious Fevers.

On the visitation of a contagious Distemper in a large boarding-school, I have frequently witnessed that the master or governess suffered the greatest anxiety and dismay. And before I had discovered the laws by which the poison is communicated, and by what method the mischief may be prevented, my mind has often sympathized in these alarms. In many of our large schools through the kingdom, such Distempers have frequently produced dreadful effects. In some instances, the scholars have been permitted to associate together, till the Infection had spread to a fatal extent: in others, they have been sent home, not only to the great detriment of their education,

but

but so as to occasion much danger and alarm, by conveying the Distemper among their own relations. The poison, as above explained, generally remains so long in the body in a *latent* state, that a scholar may travel many hundred miles in perfect health; and yet, when he is received into the bosom of his own family, may communicate to them the Contagion of the school. I have heard of parents who regarded the arrival of their own children with terror, even from such scenes of imminent danger.

If the principles above explained be well-founded, much mischief may be with certainty prevented. In every boarding-school, a large airy room ought to be appropriated to the reception of scholars ill of infectious Distempers. Where the patients are numerous, or where there are several patients in different boarding-houses, near each other, it  
would

would be more commodious, though by no means indispensably necessary, to provide lodgings for them in a separate house. The poison might perhaps be more easily and more inadvertently conveyed from one room to another, in the same house, than from one house to another. But, even in the latter situation, too great security would be dangerous, and in both cases, a strict observance of the *Rules of Prevention* is fully adequate to the purpose of safety. To prove that these assertions do not merely depend upon speculation, I will recall to your recollection an account of some facts, published upon another occasion,\* which fully evince the doctrine which is here maintained.

“ In April 1779, Master PLUMBE, the son of a gentleman of fortune near Liverpool, was attacked in a dangerous degree, with a scarlet Fever and sore throat, in the house of his school-master, the Rev.

\* See SKETCH, p. 347.

Mr.



Mr. VANBRUGH, at Chester. There were at this time thirty-seven young gentlemen, boarders in the family, most of whom, it is highly probable, were disposed to receive this dangerous Contagion. My patient's chamber was situated in the middle of the house, at the landing of the first pair of stairs: all the scholars went close past his door several times a day. At this season, Winchester and several other large schools in England, sent home and dispersed their scholars, on account of this Distemper, which had alarmingly spread among them. Whether this measure, with all its inconveniences, was not advisable, became a serious question. The numerous facts which I had then collected to prove that the Variolous Infection, though probably the most virulent we are acquainted with in this climate, exerted its baneful influence but to a small distance only from the

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poison,

poison, encouraged me to hope that the Contagion of a scarlet Fever was incapable of producing more extensive mischief. The *Rules of Prevention* were placed on the door of the patient's chamber, and rigid attention to their faithful observance was required. The event fully justified my hopes. Though all the thirty-seven scholars remained in the same house and family during the whole disease, yet not one of them was infected.

“ I do not recollect any observations recorded by authors to determine what proportion of mankind are liable to the attack of the scarlet Fever. In October 1778, out of forty young ladies at a boarding-school in Chester, all but four had the Distemper, twelve very severely, and two most dangerously. This comparative statement of facts shews, beyond all reasonable doubt, to what a little distance from the poison the infectious miasms extend,

extend, and that the *Rules of Prevention* are in this respect fully adequate to their purpose."

It is universally known that the scarlet Fever, with a sore throat, is extremely infectious. From some cases which I have observed and noted, it is manifest, that in this Distemper the *latent* period of Infection is much shorter than in the Typhous Fever. In some instances it did not exceed a week. The facts above related are of such magnitude, and so fully authenticated, that they convey the most useful instruction. It may be applied with confidence, in all boarding-schools, and, as far as we yet know, in all infectious Distempers.

Chester is much celebrated as a place of education for the youth of both sexes, especially for young ladies. Ever since 1779 I have strenuously enjoined the high importance of a strict observance of  
the

the *Rules of Prevention*, and an implicit confidence in their efficacy. In some instances, I have known a Distemper communicated to several scholars before it was supposed to be infectious, and before any separation took place. But in the whole period of nineteen years, and in all the boarding-schools of Chester where I was consulted, when the Rules were faithfully observed, I do not recollect a single example where the Infection was communicated to a second scholar.

You will observe, my Friend, that the doctrine which I advance, and the practical conclusions deduced from it, are fully applicable to the Small-Pox, Measles, Scarlet Fever, Chin-cough, Mumps, &c. I could farther explain how certain Catarrhs, particularly the Influenza, are produced by Contagion, and might be prevented. I wrote a paper to explain in what manner the latter Epidemick is communicated,



communicated, some years ago, addressed to a most respectable Society of Physicians, which may sometime be published. But these disquisitions would lead me too far from the business of the present Letter.

Another caution, however, ought not to be neglected. Many Fevers, which commence with inflammatory symptoms, become contagious. All doubtful cases of Fever ought therefore to be immediately separated from the healthy scholars. In such disorders, the most sagacious physician cannot insure perfect safety, that the Distemper has no infectious quality.

The Regulations here recommended for boarding-schools are strictly applicable to nurseries of children. In this situation, I have frequently observed, that when a Fever, Catarrh, &c. attacks one child, it generally affects the rest, with their parents, nurses, &c. By removing  
the

the first patient ill of any Fever out of the nursery into a separate apartment, the Contagion may be prevented from spreading through the family.

It will frequently happen that so many children in a school may have caught a Fever before the Distemper is supposed to be contagious, that all the patients cannot possibly be accommodated in one apartment. But even in this extremity, nothing can be more easy, safe, and effectual, than to provide spacious, airy, and commodious lodgings in the neighbouring houses. To this arrangement there can be only one objection, proceeding from the erroneous idea that the whole atmosphere of the place is become pestilential. At Manchester you have sadly experienced the pernicious effects of such groundless alarms. And you may recollect that, in the introduction to my *INQUIRY how to prevent the Small-Pox*,\* it is mentioned,

\* Page 5.

that

that a physician of great reputation, Dr. ASH, of Birmingham, asserted, that he had known the influence of the variolous poison to extend for *thirty miles*. No physician of his time was honoured with a higher reputation than Dr. ASH, which, according to the opinion of competent judges, he was thought to merit. If a man of superior understanding could act upon such erroneous principles, how extensive and pernicious must these professional errors prove, when generally adopted by persons less capable of judging for themselves. But the foundation of these alarms may be determined, in every instance, by the test of observation. What proportion of mankind is liable to receive the typhous Contagion I have already attempted to estimate. Upon these *data* we may safely reason. When many individuals of a family remain in health, we may be fully convinced that neither the whole

whole atmosphere, nor even the air of the whole house, has any pestilential quality. It need scarcely be intimated that these arguments are restricted to the typhous Fever, which proceeds from personal Contagion. It is quite foreign to the present discussion to inquire what numbers in a family are affected by Fever in an unhealthy climate or marshy situation.

In the military profession, it is justly thought of importance to know what is a safe distance from the shot of a cannon, or a musket. If we were to read in the Gazette that a General had ordered a garrison to retreat from a fort because it might be attacked with musketry from a hill at the distance of a mile, all the world would reprobate his ignorance or his cowardice, as most disgraceful.

The apprehension of a physician, that the poison of *Typhus* might communicate the Distemper, through the open air, at  
the



the distance of ten yards, is equally visionary and groundless. We hear of people frightened at the danger of passing through a street, because in one of the houses, a patient lies ill of a Fever. The numerous facts related in this Letter incontestably prove, that such fears are quite ridiculous. When danger is uncertain and indefinite, we know not the limits of perfect security.

#### IV<sup>th</sup> PRACTICAL CONCLUSION.

*In an Hospital, infectious Fevers ought never to be admitted into the same wards with patients ill of other diseases.*

Infectious Fevers improperly admitted into wards with other patients.

It having never been accurately ascertained in what circumstances infectious Fevers are communicated, it happens, as might be expected, that some physicians, and of the greatest eminence, act under the influence of superfluous fear. Others,

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on the contrary, not less distinguished for medical knowledge, rashly permit and advise an intimacy of intercourse which is extremely dangerous. Of the latter kind, undoubtedly, is the error of admitting Fevers promiscuously with other diseases, into the same wards of an Hospital. It is well known, that all the patients, who are associated in the same wards with Fevers, are not infected. And this is another proof that the pestilential influence extends but to a narrow sphere from the poison. But the inhabitants of an Hospital have been unaccustomed to the habits of cleanliness, and on that account, the danger of spreading Infection is greatly increased. Wittingly to allow the admixture of a poisonous ingredient, as arsenic, into the diet of an Hospital, though in so small a proportion that it might not be discovered by its pernicious effects, if taken for weeks together, would be highly  
and

and justly condemned. It has been proved, that typhous poison, in a full dose, will infect a large proportion of mankind. It may be presumed that a poison which is so generally injurious, might, even in a small dose, be sometimes productive of mischief. Under the name of the Hospital Fever, there cannot be a doubt that it occasions many fatal consequences. The Manchester and Liverpool Infirmeries, from their first institution, have strictly prohibited the admission of Fever patients; yet into both of them the typhous Contagion was inadvertently received, and it spread in so alarming a degree that the patients were taken out of the wards in order that they might receive a thorough purification. If such pernicious effects were produced in Infirmeries, which were protected by such judicious regulations, what fatal consequences may be justly apprehended in  
other

other Hospitals where infectious Fevers are indiscriminately admitted.

In this way, I had reasoned, upon general principles, on the pernicious effects of mixing Fevers with the other diseases of an Hospital. No particular facts had occurred to my observation to prove, in a direct manner, the truth of this conclusion.

On submitting these remarks, in the words above stated, to some very intelligent medical friends, I was favoured with these interesting and instructive facts. Sir WILLIAM WATSON informed me, that “in St. Thomas’s the three physicians I studied under all fell victims to Hospital Fevers, to wit, Drs. AKENSIDE, RUSSELL, and GRIEVE, and Mr. WARRING, surgeon.” To these may be added, according to Dr. WOODVILLE, two other physicians of St. Thomas’s, namely, “Drs. WATKINSON and KIER, and one of Guy’s, Dr. HINCKLEY.” But Dr.

SAUNDERS,



SAUNDERS, who confirms all these facts, assures me, that “no physician or surgeon  
“in Guy’s Hospital, for upwards of thirty  
“years, has suffered by a typhous or contagious Fever. He explains this difference in a very judicious and satisfactory manner so as clearly to confirm the doctrine advanced in this Letter. “The room  
“in which the out-patients were prescribed for was of a very small dimension, and extremely crowded, at St. Thomas’s Hospital. The room for the  
“out-patients in Guy’s was large.”

Again, I have been informed, that  
“three physicians and a medical student  
“of one of the largest Hospitals in London died within the space of eight  
“years of malignant Fevers; the causes  
“of which, though they could not be  
“traced to the Hospital, were probably  
“derived from it.” This intelligence I received from the physician who succeeded

ceeded the last who died; but he did not chuse that his name, or that of the Hospital, should be mentioned.

As the cause of these calamities is so fully explained, and as the means of preventing them is so obvious and so easy, I hope that, in future, no physician, surgeon, or medical student, will ever in future be infected with a typhous Fever in an Hospital.

From the fatal effects of this practice upon known characters, who suffer only a temporary exposure to the Contagion, and are supported by a generous diet, we may form some conjecture of the mortality produced by such measures upon the unknown multitude admitted into these Hospitals, exposed constantly, for weeks, night and day, to breathe an atmosphere impregnated to a considerable degree with these pestilential miasms.

So long ago as 1774 I published an observation, which proves the healthy state

of the Chester Infirmary, that only 1 in 26 dies of all the patients who are admitted. The fatality appears to be *double* this proportion in Hospitals where patients ill of infectious Fevers are indiscriminately received.

#### V<sup>th</sup> PRACTICAL CONCLUSION.

*When an infectious Fever is in a small* Use of Fever Wards.  
*house, the family cannot be preserved from it unless the patients are removed into a separate building.*

From the whole tenour of this Letter, you will perceive the reasons why, in our former correspondence, I uniformly and strenuously objected to the measures by which it was attempted to check the progress of the epidemical Fever which so long and so fatally prevailed at Manchester, with assurances that your regulations  
for

for this purpose would be unsuccessful. You clearly see the necessity of taking poor patients, ill of Fevers, out of their small, close, and dirty dwellings, into spacious, airy, and clean apartments.

You will remark, that the whole of this inquiry was instituted, before our ingenious friend Dr. CARMICHAEL SMYTH had published his experiments and observations on this subject. He has produced very strong evidence in support of the method which he recommends, to destroy the pestilential Contagion by the vapour of nitrous acid. But I have had no opportunity to make any trial of a process, which so highly merits the attention of medical men, from the respectable testimony by which it is recommended, and from the great benefit which might hence result to mankind. The preliminary facts stated in this Letter will enable others to determine, what efficacy  
is



is possessed by the vapour of mineral acids superior to the method of purification, which solely depends upon cleanliness and fresh air.

As the Fever Wards of the Chester Infirmary, in size and situation, are peculiarly favourable to the success of such an establishment, a description of them may be useful, and may suggest the adoption or construction of similar Wards in other Hospitals; for the same important purpose. In the year 1783, on looking out for proper accommodation, I found the attick story on the north side of the building unoccupied, and merely a lumber room. It is ninety-six feet long, twenty-one broad, and being not ceiled, it is open to the roof, which is sixteen feet high. This chamber is divided by a partition in the middle, thus forming two wards of forty-eight feet each in length. Through them is admitted a very free circulation

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of air, by nine windows, which are placed on all sides of the wards, and by others in the adjoining passages; by a door in the partition between the wards, and by a large aperture in the upper part of the partition. Several of these windows are constantly open during the day, nor are they all closed even at night, if the patients be numerous, and the weather moderate.

Adjoining to the west end of these wards is a room for the nurse, into which a Fever patient is sometimes admitted. At the east end of the wards, a wash-house is conveniently situated, so that no foul clothes need be brought among the other patients. On the same side and floor, there is placed a separate necessary, which prevents all personal intercourse with the rest of the Hospital.

In order to complete this description it will be proper to insert the following account of the Chester Fever Wards, which  
was

was written in the form of a Certificate, to be signed by the medical and other governors of the Infirmary. It was, however, from some particular circumstances, you know, communicated in a Letter to yourself merely on my own private authority, to obviate the alarms at Manchester, lest your House of Recovery, placed in a spacious area, should communicate the infectious Fever to the neighbouring inhabitants.

“ *April 27th, 1796.* ”

“ THE Chester Infirmary is a close square building. Its inner area is eighteen yards and a half by fourteen yards. The attick story of all the north side of the house, divided into two wards, has been appropriated to the reception of patients in infectious Fevers ever since the year 1783. Patients who have no Fever are lodged under them, and on all the other sides of this area. The windows  
of

of the Fever Wards, during the day, are almost constantly open into the area; from whence windows open into all the other wards. One ward is situated within THIRTEEN YARDS of the FEVER PATIENTS, with whom it communicates on the same floor by a passage and doors frequently open; and yet, during the whole period of this establishment, now above twelve years, it has never been suspected that the patients in other parts of the house have caught any Infection from the Fever Wards by any contamination of the atmosphere; nor from any transgression of the *Rules of Prevention*; which require ventilation, cleanliness, and separation, and may be seen in Howard's account of Lazarettos, p. 209. Some dwelling-houses are placed at but a little distance from the Fever Wards: and Stanley-Place, inhabited by very genteel families, is not far distant from them."

You



You will remember at what a very critical moment this intelligence arrived. It is strongly marked in your answer which I have annexed, dated the next day, the 28th of April, 1796.

“ Your letter is this instant arrived. A simple relation of facts as you have stated them, without the formality of a Certificate, will completely answer all our purposes. I shall therefore, as there is not sufficient time to obtain your permission, state at our meeting *to-morrow*, (which must be *decisive* of the scheme) on the authority of information, which I will pledge to be accurate, that “ The Chester Infirmary, &c.”

At the commencement of this Institution, at Chester, apprehensions of the danger of Infection were so prevalent, that no nurse could be persuaded to attend the Fever Wards. In these difficulties, a surgical patient was prevailed on to undertake

Visitors  
never, and  
Nurses sel-  
dom, infect  
ed in the  
Chester F  
ever Wa

undertake this office in the men's ward. He caught the Fever, and died of it.

When a proper nurse was procured, she (LOWRY THOMAS) had the care of both wards for eleven years, with only occasional assistance. During this period she was infected by the Fever several times, and died of it in July 1794, on the fifth attack, after a week's illness. The nurse who succeeded has twice caught the Fever, and was each time very ill of it, but otherwise has enjoyed good health, for four years. A night-nurse, as before-mentioned, 1<sup>st</sup> Table, No. 48, caught the Fever. And other occasional nurses may probably have suffered Infection.

But as far as has come to my knowledge, these four are the only instances of Infection communicated in the Fever Wards at Chester, during a period of fourteen years and a half; from August 1783 till March 1798. Both these nurses (LOWRY THOMAS

THOMAS and JANE BIRD) were susceptible of Fever. They both exposed themselves to Infection without reserve; even more than was necessary and useful, especially the former. In spite of cautions and exhortations to the contrary, which I have often given her, she used to approach those who were very weak and ill, so close that she must have inspired the infectious breath of a Fever patient, with very little dilution of other air, in thousands of instances, without receiving Infection. Indeed the escape of these nurses from the danger to which they were exposed, must be, in some measure, ascribed to a cause before-mentioned. They had been accustomed, for months, and even years, to breath a dilute pestilential atmosphere. It is probable, on this account that a larger dose of it might be required to produce Infection in them than in other persons.

No

No medical or other visitors were ever suspected to have caught Infection in these Wards, though they have touched the patients in innumerable instances. Yet the apothecary (Mr. MANNING) was susceptible of Infection. He caught a very dangerous putrid Fever, by visiting a poor sick family (which I also visited) as out-patients, in a close dirty room: unreasonable prejudices prevented these poor people, when attacked by the Fever, from accepting the benefit which the Infirmary offered to their choice, of being admitted into the house.

In the vehement contest which you, with difficulty, sustained, for the existence of the House of Recovery at Manchester, you thought it an important truth to establish, by the facts which the institution at Chester has supplied, that the febrile Contagion could not be conveyed through the air to the distance  
of



of “ THIRTEEN YARDS” from the poison. Upon the evidence of the facts above related, you now would not hesitate to pronounce that a separation one hundred times less, from one room to another, would insure safety from all danger.

As I hope that our proceedings merit imitation, I will here insert the directions given in 1783, which have ever since been observed with complete success.

*RULES for the FEVER WARDS; to prevent the INFECTION of other Patients in the CHESTER INFIRMARY.*

I. *Fresh water and coals are to be brought up to the Fever Wards every morning; and other necessaries on ringing a bell.*

II. *No Fever patients, nor their nurses, are suffered to go into other parts of the house. No other patient is allowed to visit the Fever Wards; nor any stranger, unless accompanied by the apothecary or his assistant.*

III. *Every*

III. *Every patient, on admission, is to change his infectious for clean linen; the face and hands are to be washed clean with warm water, and the lower extremities fomented.*

IV. *All discharges from the patients are to be taken out of the ward as soon as possible.*

V. *The floors of the wards are to be washed very clean twice a week, and near the beds every day.*

VI. *All foul linen is to be immediately thrown into cold water; and carefully washed twice out of cleanwater, in the adjoining room.*

VII. *Blankets, and other bed and body clothes, are to be exposed to the open and fresh air for some hours, before they are used by another patient.*

VIII. *All the bed clothes of the Fever Wards are to be marked Fever Ward, and all the knives, forks, pots, cups, and other utensils, are to be of a peculiar colour, lest they be inadvertently taken among other patients.*

IX. *Several windows in the Fever Wards are to be kept constantly open in the day, except the weather be very cold or wet; and*  
some

*some of them should not be shut in the night, if the patients be numerous, and the weather moderate.*

X. *No patient can be suffered to wear, nor any acquaintance to take away, any linen unwashed, nor other clothes, till they have been long exposed to the fresh air.*

After the dry disquisitions and tedious details which I have thought necessary to submit to your consideration, in order to illustrate this obscure but highly interesting subject, I recall, with heartfelt satisfaction, a bright and most cheering prospect to your view. To you and to your associates, particularly your medical associates of the *Board of Health*, it will afford the highest gratification as the reward of your own meritorious exertions.

Success of  
Fever Wards  
at Manches-  
ter.

The proceedings of our Fever Wards at Chester being unopposed, did not excite any particular attention. They have accomplished their beneficent purposes without

without noise and almost without notice. Hence their value in the prevention of Fevers has never been accurately appreciated. For the opposite reasons, the result of your exertions has become most perspicuous, highly to your own honour, and to the inestimable benefit of your fellow-citizens and of mankind,

#### “ BOARD OF HEALTH.

“ *Manchester, March 2, 1797.*

“ *Comparison of the number of patients ill of Fever, admitted on the physician's books, at the Infirmary, at different periods, in Portland-street, Silver-street, and other streets in this pile of buildings in the neighbourhood of the House of Recovery.*

From Sept. 20, 1793, to May 20, 1794, 8 months, 400

From Sept. 20, 1794, to May 20, 1795, 8 months, 389

From Sept. 20, 1795, to May 20, 1796, 8 months, 267

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24

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1056

From



From July 13, 1796, (less than two months subsequent to the opening of the HOUSE of RECOVERY)  
to March 13, 1797, being 8 months\* - - - - 25

These wonderful and highly instructive facts are recorded on the most authentick evidence, by “ the books of the physicians, which are kept with the greatest regularity.” Besides, the warm and intelligent opposers of this institution would have detected and exposed any fallacy, if any had existed in this report.

“ The bills of mortality for 1796 shew, that there has been a decrease in the burials, amounting nearly to 400.”

“ In 1797, the expence of pauper coffins was diminished one third.”

These few lines, taken from “ the REPORT of the BOARD of HEALTH, at the second annual meeting, May 26th, 1797,” contain so great a number of

\* Of these, in July last, there were five; in August last, one; in September last, none; from the 4th to the 23d of February last, two.

facts,

facts, and so publicly authenticated, as will not, I trust, leave the slightest doubt in your mind, or that of any intelligent reader. They clearly prove, beyond all controversy, what are the beneficial effects of the practical regulations deduced from the principles explained in this Letter. The wonderful success of these proceedings, may afford some degree of hope that infectious Fevers might be completely exterminated from a town or district where all the purposes of such an institution are punctually executed. But upon this head, there are some difficulties and doubts.

Regulations  
to extermi-  
nate infect-  
ious Fevers.

It may be proper to inquire, are Typhous Fevers, like the Small-Pox, always produced by a specifick Contagion? Or, on the contrary, are they also generated by close, dirty, crowded rooms, or by certain seasons, and other causes? I have attempted to obtain answers to these questions:

tions: but the evidence which I have collected, not being completely satisfactory, it would be premature to enter into particular details on this subject.

However, an attempt entirely to destroy the Contagion is highly laudable. The more accurately the regulations are observed, the greater will be your success in preserving the poor people from these dreadful calamities. In the House of Recovery, you have judiciously adopted some regulations, which on my recommendation, had been successfully employed by the Small-Pox Society of Chester, to check the progress of that Distemper. 1. *By one of them you require and reward a thorough cleansing of the poor dwellings which had contained infectious Fevers, by washing and airing all the clothes, floors, utensils, &c.; and by offering a double reward in cases of extraordinary danger, and when the attentions have been adequate and successful.*

2. *You*

2. *You have very properly added a provision for the expence of white-washing the walls, which is a cheap and cleanly mode of purification, and also for the charge of purchasing new bed-clothes and apparel, in lieu of such as it may be deemed necessary to destroy.* In a strict medical view, the destruction of clothes, &c. which cannot be purified from Contagion by washing and airing, may seldom be indispensibly required. But dirty rags ought to be burned, because they are not worth the trouble of cleansing, and a supply of good clothes to a poor family can never be more seasonable than after the visitation of an infectious Fever.

3. *You have very wisely adopted another regulation of the Small-Pox Society of Chester, by offering rewards for early intelligence on the first appearance of Fever in any poor habitation.* If this measure be fully executed, the rest of the family may  
be



be generally preserved from Infection, especially if the methods of purification by cleanliness and ventilation be thoroughly and immediately accomplished.

4. *You very properly require, as was our practice at Chester, that Fever patients should be conveyed to the House of Recovery in a sedan chair, to be employed solely for this purpose, with a moveable lining, which should be of linen, and always exposed to the air after it has been used, and frequently washed. It would be an easy and useful improvement to have a sedan constructed in such a manner that it might occasionally lean backwards in various degrees, so that the patients may lie in a recumbent or half recumbent posture as may best suit their situation. In the state of extreme debility to which patients in nervous and putrid Fevers are frequently reduced, this improvement in the sedan which carries them, would be of the high-*

est importance, not only for the comfort, but even for the life of the patient. To you I need not observe, that in such Fevers, an erect posture frequently occasions fainting fits and other very dangerous symptoms.

5. Upon this head, it will not be improper to take notice, that cleanliness, in every respect, will be very conducive to prevent the generation of Fevers. *For this purpose, as well as other advantages, the streets of a town ought to be frequently and thoroughly cleansed from all dirt. It is always in a putrid or putrescent state.*

Regulations  
to prevent  
Fevers ought  
to be generally  
adopted.

To you I need not remark, that the advantages of the regulations for the prevention of Fevers is not limited to such towns as Manchester and Chester. They may be employed, at a very moderate expence, in any village. We both of us have seen numerous examples where febrile Contagion has spread misery and destruction

destruction through small towns and detached houses in the country. As before intimated in this Letter, I suspect that an infectious Fever had been spreading through some villages of Wirrall in Cheshire for eighteen years. Such calamities may easily, and I trust now will frequently, be prevented.

My friend and fellow-student at Cambridge and at Edinburgh, the Rev. JOSEPH TOWNSEND, rector of Pewsey in Wiltshire, whose superior mind has enlarged human knowledge on various, particularly on medical subjects, gave me the following instructive intelligence. ‘When I had my  
‘ putrid Fever I took it from my gardener,  
‘ and he received it from a poor cottage.  
‘ My room was well ventilated, and no  
‘ one caught the Infection from me. Mr.  
‘ STEPHENS took the Infection from a  
‘ poor patient, but no one received it  
‘ from him. RICHARD HOOPER, the  
‘ principal

‘ principal farmer, had the same Fever;  
‘ but no one took it from him. Both  
‘ houses were well ventilated.—In the  
‘ year 1787, out of two hundred poor fa-  
‘ milies sixty-three poor people died of  
‘ Typhus, but no other farmer or princi-  
‘ pal tradesman had this Fever. When  
‘ one family died off, another succeeded  
‘ to their cottage, and the new comers  
‘ caught the Fever.’

Many years ago, my dear Friend, by your benevolent disposition and pathetick pen, the publick attention was first excited to commiserate and relieve the poor manufacturers in and near Manchester, suffering under the various calamities of infectious Fever.\* Sir WILLIAM CLERKE, and Dr. FERRIAR, have amply confirmed your observations, and employed their best endeavours to check its fatal ravages.

\* See PERCIVAL's Medical Essays, vol. i. p. 296, and other papers, which he had previously published.



The benefit of such institutions may be extended even to the metropolis, with still greater certainty of success. Contagious Fevers appear to be the chief cause why there is a much greater proportional mortality in large than in small towns, and houses dispersed in country situations. Lanes, entries, and courts, communicate Infection to each other. Whole families sink down together oppressed with putrid Fevers, in penury and wretchedness, without a single hand to afford them help or comfort.\* Such calamities, however

\* As few except medical visitors of these gloomy mansions are acquainted with the dreadful misery suffered by poor people ill of infectious Fevers, I will insert a short petition which I addressed to some of my fellow-citizens at a coffee-house in Chester, who (as they always did) immediately supplied the desired relief.

“ A DISTRESSED FAMILY.

“ WILLIAM WAIN, in Nun's-Lane, blacksmith, whose settlement is sixty miles off, has four small children, of whom two lately lost their sight by the Small-Pox. The father and three of the children are now ill of a putrid Fever; and one of them has at present a  
mortification

dreadful, might be easily and effectually prevented, and at a very moderate expence, if compared with the inestimable blessings which might thus be attained.

If six or eight Hospitals, situated in different parts of London, would open a spacious ward for each sex, in some part of the building or closely adjoining to it, the most salutary consequences would soon be manifest. Except in checking the ravages of the casual Small-Pox, no human exertion could be employed with so much success to prevent the misery and destruction of the poor as the accommodations here proposed. I have already made what feeble efforts are in my power

mortification in his throat. There is not a sheet in the house. The father and children have only one ragged shirt a piece. Old linen sent to the house, and money collected by the waiter of the coffee-house, are requested, to relieve their extreme wretchedness.—Oct. 29, 1774."

There is in my possession, the original paper, on which are written the names of thirty-four charitable benefactors.

to

to promote such beneficent establishments. On this subject, I have had an opportunity in conversation to address some exhortations to two most respectable medical friends. One of them, Dr. SAUNDERS, physician of Guy's Hospital, fully assented to the reasonableness of my arguments, and in a future conversation on this subject informed me, that two wards in Guy's Hospital are to be appropriated to the reception of infectious Fevers. The other, Dr. W. HEBERDEN, physician of St. George's Hospital, informed me, that this charity would soon receive a large accession to its funds. And being, as you know, well disposed to entertain hopes that what I ardently wish may be accomplished, already I have formed sanguine expectations that a part of this money may be appropriated to the erection and maintenance of Fever Wards. When Physicians so eminently

nently distinguished for medical knowledge promote such measures, the example, we may reasonably hope, will be adopted in the other Hospitals in the metropolis. Whenever this is accomplished, it will, I hope, be accompanied with the other preventive measures above recommended, of cleansing and white-washing the infectious house whence the patients are taken as directed p. 109, &c.

It is not improbable that in some of the London Hospitals (as at Chester) the attick stories may be empty, and may be appropriated to the reception of infectious Fevers. Upon this subject I have had an interesting conversation with the three\* earliest and most zealous proposers of the *Society for promoting the comforts and bettering the condition of the Poor*. And you, I know, will agree with

\* WILLIAM MORTON PITT, esq; M. P. WILLIAM WILBERFORCE, esq; M. P. and THOMAS BERNARD, esq.



me that regulations to prevent contagious Fevers will answer these purposes in a more eminent degree than any other benefit which it is in the power of the rich to bestow.

The prevalence of infectious Fevers in London has lately claimed the particular attention of several very intelligent physicians, particularly Dr. WILLAN. Both in the Monthly Magazine, and the Physical Journal, many interesting facts to illustrate this subject, have been published, so as to excite attention and sympathy. Some time ago, Dr. LETTSOM,\* with his usual humanity, had not only given a pathetick description, but a mournful picture of a poor family, suffering under the manifold miseries of an infectious Fever. The *Pestis* of LIVY, which he so often mentions in his History, as fatal to the citizens of Rome; and the *Plague*, which

\* See his Hints, p. 93.

. always

always constituted an article in the London bills of mortality, till the extensive destruction of the latter city by fire, in 1666, were probably no other than Typhous Fevers. Dr. FALCONER, in a paper which he read, some months ago, to the *Literary and Philosophical Society of Bath*, has proved in the most satisfactory manner, that the true *Plague* was never described by any ancient author; not even by THUCYDIDES nor LUCRETIVS, earlier than 535. In this year, PROCOPIUS published an account of the *Plague*, and was the first author who characterised this fatal Distemper by an accurate description of its buboes, carbuncles, and other pathognomonic symptoms. Our learned Friend has employed his wonderful faculty of collecting all the scattered rays of antiquity, in order to illuminate this as he has already done other dark and doubtful points of science, to the comprehension

hension of the dullest, and the conviction of the most sceptical reader.

There have been various attempts, you know, at Liverpool, to adopt the measures so successfully practised at Chester, to prevent infectious Fevers. With great satisfaction I received your information, a few months ago, that a permanent Institution is soon to be established for the general reception of the poor affected with the typhous Contagion. From the interesting facts published by our most intelligent friend Dr. JAMES CURRIE, it manifestly appears, that such an institution in this populous town would have the most salutary consequences, in preserving the lives of many among the lower, and some among the higher, ranks of society. Fever Wards were established in 1787 at Liverpool, in imitation of ours at Chester; but groundless fears soon excluded them from the Infirmary, as he  
has

has fully explained.\* This circumstance sufficiently proves how important it is to investigate the laws by which the typhous Fever is communicated.

A patient of mine has lately informed me, that at Norwich, on the most respectable medical recommendation, Fever Wards are to be prepared for the reception of the poor inhabitants of that large city.

You will undoubtedly agree with me, that at Bath it is peculiarly our duty to form an establishment to prevent infectious Fevers. As persons of all ranks, afflicted with various maladies, resort hither in great numbers, for remedies which exist in no other place, our special care ought to be employed to preserve not only our fellow-citizens, but strangers, particularly all sick strangers, from such additional Distempers as it is in our power to prevent.

\* See CURRIE's Medical Reports, p. 219.



The apartments in the attick story of the Bath City Infirmary, as was the case at Chester, are at present empty and unemployed, so that no additional building will be required for the purpose. The maintenance of two Fever Wards would undoubtedly require a considerable expence; but in so opulent and charitable a place as Bath, much difficulty of this kind cannot be supposed to exist. When this measure is accomplished, I have no doubt that what in a former Letter I said of Chester may be applied a few years hence at Bath. “ I am confident that our two Fever Wards do ten times more real good in the prevention of misery and the preservation of life, than all the other parts of the Infirmary.”

These speculations lead to an enlarged prospect of general beneficence. In most of the principal towns in Britain, there exists an Infirmary supported by voluntary

tary contributions. In many of them will probably be found two vacant wards in the attick story, which might be appropriated to the reception of Fevers, without abridging the conveniences of the other patients. At any rate, an additional building, to consist of two wards, a laundry, and a bedroom for a nurse, might be constructed at a very moderate expence. You will not think these expectations too sanguine when we consider the active beneficence of our medical brethren, and the zeal with which they offer their gratuitous services to the poor. The rich bounteously subscribe for the relief of the distressed part of the community when afflicted with diseases which cannot personally be injurious to themselves. The motive of self preservation will be added to that of general humanity, to support measures for the extermination of an infectious Fever, which  
by

by many unavoidable accidents might bring this malignant poison into their own families.\*

In contemplating this pleasing prospect, you will, I know, excuse me for expressing peculiar satisfaction, that the whole plan, which promises such extensive benefit to mankind, originated at Chester, where so prosperously and happily I have spent the best portion of my life. When the institution to prevent the casual Small-Pox, and the regulation to receive patients ill of Fevers into separate wards of the Infirmary, and various similar plans were first proposed, I ever found them ready with heart and hand to adopt, promote, and support such beneficent establishments. To all my medical brethren, and particularly to my intelligent

\* The greatest danger of receiving Contagion into a house, arises from linen washed in a poor family, ill of an infectious Fever.

and

and steady colleagues, to Dr. WILLIAM CURRIE, physician, and to Messrs. ORRED, MORRALL, ROWLANDS, and FREEMAN, surgeons, of the Infirmary, I owe every grateful acknowledgment for their uniform encouragement and assistance in the execution of these measures. To them all, every plan was previously and privately communicated, with a request freely to suggest objections and improvements. In this stage of the business, if the slightest breath of opposition had arisen, these charitable innovations would have never existed, and very probably the plans themselves might never have been recorded, but have remained for ever in oblivion. Such candour and confidence merit great praise. Having never entertained the remotest suspicion that my proposals were brought forward with any false pretences or selfish views, they cordially promoted their execution.

On



On my change of situation, you will think me uncommonly fortunate in being placed at Bath so eminently distinguished for the liberality, charity, and superior knowledge of its inhabitants.

## VI<sup>th</sup> PRACTICAL CONCLUSION.

*In like manner infectious Fevers may be prevented in the Army and Navy.*

Dr. JAMES FELLOWES, physician to Army.  
the army, has had very great opportunities to make observations on Fevers, in Flanders, Holland, and the West-Indies. Having a good understanding and education, he was well qualified to deduce useful conclusions from the events which he saw. He thinks that Fevers are frequently generated in a camp by foul air. Ten or twelve soldiers sleep in a small bell tent without any ventilation. He has  
K observed

observed Fevers produced by this noxious air, as might be reasonably apprehended. In a conversation with me on this subject he expressed an anxious wish, that some safe method could be devised to discharge the foul air from these tents. To accomplish this purpose, I suggested to him a contrivance by grooves in the head of the centre pole of the tent, to permit the foul air to escape, and yet to keep out rain. He approved the design. It was shewn, with a drawing, to a most respectable friend of mine, the Right Hon. THOMAS PELHAM, who honoured this Letter with a perusal. The same idea had previously occurred to him, and he had executed it in a different manner, as he expressed by a drawing, and the following description:

“ Three holes were cut in the upper part  
“ of the tent, and a triangular piece of  
“ canvas was placed over them, and sown  
“ on two sides, so as to let the foul air  
escape

“ escape from the cavity left by the third  
“ side not being sown down. Such tents  
“ were used with great success by the  
“ Sussex and West-York Militia at War-  
“ ley camp in 1796. The soldiers could  
“ bear to have the lower part shut with-  
“ out any inconvenience. Before this  
“ improvement they always suffered from  
“ too great heat or too much cold. When  
“ the experiment was made at Warley  
“ camp, for ventilating the tents by cut-  
“ ting holes in the tops, I questioned  
“ several of the men about it, and asked  
“ them whether they suffered from cold  
“ and rain coming in at the holes, or  
“ from heat, by having the tent door  
“ shut. The universal answer was, that  
“ they suffered no inconvenience; and  
“ the observation of many was, that “ *it*  
“ *was a power sweeter in the morning.*”

It will be unnecessary to insert either  
Mr. PELHAM's drawing or my own, or  
to

to give any farther description of them, as there can be no difficulty in contriving various methods by openings on the summit of the tent, to permit foul air to escape, and yet entirely to exclude rain.

These regulations to prevent the generation of Fevers, will require to be executed with much greater exactness, to prevent their propagation. Hospital tents ought to be spacious and numerous. They should be constructed in such a manner as to admit free ventilation. By plentiful dilution with fresh air, and rigid attention to cleanliness, it appears very manifest that soldiers, in a healthy situation, might be effectually preserved from infectious Fevers, Dysentery, &c. The whole army, with a few accidental exceptions, would be constantly fit for duty. Every camp ought to be plentifully supplied with such accommodations, which are most essentially important, not only  
to



to their safety, but their military force. Thousands of men and millions of money might be saved by a sufficient supply and judicious employment of cords and canvass, which are neither expensive nor cumbersome provisions for an army. The tent poles any country will supply.

The jails in which deserters from the Deserters. army are confined, for obvious causes, are peculiarly exposed to infectious Fevers. The military prisoners, who pass in great numbers to and from Ireland, are lodged in the castle at Chester, and have, for a long series of years, to my knowledge, been frequently afflicted with this Fever. In 1772 I attended an apothecary who caught this Infection, and died of it. In the year 1793, there were 17 out of 18 deserters in this prison, ill of this Fever at the same time. The county magistrates, affected with the melancholy situation of these prisoners, and alarmed at the danger

ger of their communicating the Contagion to the inhabitants of the city, desired the Physicians of Chester to give their advice and assistance in what manner the mischief might be prevented. We addressed a memorial to Government, recommending the adoption of regulations similar to what had been long practised at our Infirmary. These measures were approved, and executed with complete success. And there is reason to hope that they will be widely extended for the general benefit of the British army. For in a few months after our correspondence with the Right Hon. Mr. WINDHAM, secretary at war, a medical Inspector, sent from the War-office to visit all the military Jails and Hospitals, brought to us again our own rules, injoining a strict observance of them, which I had the satisfaction to learn was the order of Government.

If

If we take into consideration how long Infection remains in the body in a latent state, that, in this period of time, deserters are sometimes removed to their regiments or ships, at a great distance, we shall clearly understand in what manner infectious Fevers may be introduced into our army and navy.

According to the judicious recommendation of our friend the Rev. Dr. PEPLOE WARD, of Chester, to Administration, a numerous body of deserters from the army were permitted to enter themselves into the navy. . But before their removal to the ships, I prevailed upon him to allow a proper time for the performance of quarantine, in a clean jail. During this period, some of the deserters fell ill of the Fever, from the Infection which they had previously received. This caution deserves general attention, particularly in the navy. Sailors taken out of an infectious jail  
should

should never be mixed with the crew of a ship, till a sufficient time had elapsed to discover whether any latent poison had infected them. Such considerations are of great national importance.

Navy. The whole doctrine of febrile Contagion explained in this Letter is in every respect applicable to the preservation of sailors and soldiers on board ships of war, and even transports. In regard to cleanliness and ventilation, and the separation of patients ill of infectious Fevers into the sick birth, or an hospitalship, I understand that excellent regulations are already established in the British navy. And it is not the purpose of this Letter to repeat what is already known, and what has been fully explained by others.

One remark may be new and important, deducible from the facts above stated. From the ignorance which has hitherto prevailed, to what extent, through the  
medium



medium of air, Fevers are infectious, I apprehend that there must have arisen many difficulties and embarrassments greatly to the disadvantage of the patients, so as generally to confine them in a pestilential atmosphere within their sick births. You will have no doubt in agreeing with me that persons ill of infectious Fevers may be brought upon deck, and placed indiscriminately among the healthy soldiers and sailors of the vessel, without any hazard of communicating the Contagion; provided that they are dressed in clean clothes. On these occasions, the sick births should be perfectly cleansed. The bedding, chests, bundles, &c. ought to be brought upon deck, and exposed to the fresh air. It will be superfluous to remark, that all the Rules of Prevention, recommended for Fever Wards, p. 105, ought to be observed in sick births.

Among

Among other causes of the wonderful achievements of the British fleets, it is not the least that the sailors, during the whole war, have enjoyed a high degree of health. You will agree with me, that this happy circumstance is chiefly to be ascribed to the wisdom of medical regulations and improvements. And you will not be displeased that I thus claim some and no inconsiderable share of honour to our profession from the late glorious victories of the British navy.

In this probationary state of existence, for good but inscrutable purposes, there is, in all human affairs, an admixture of pain and pleasure, fear and hope, disappointment and enjoyment. On looking at the world around me I have reason, much reason, to be gratefully thankful to the wise Disposer of all things, that hitherto my lot has been comparatively fortunate, prosperous, and happy, with a  
mind

mind well disposed to relish such felicity. But to one who has passed through such a busy and varied scene of life; who has had such intimate intercourse, and for so long a period of time, with the different ranks of society, some painful anxieties have undoubtedly been my portion. Upon these and many other occasions, the contemplation of plans for the prevention of Distempers, and others, for the improvement of the children of the poor in habits of industry, morality, and religion, has ever had the happiest influence in restoring a placid serenity of mind, and in administering heartfelt consolation in scenes of the deepest melancholy. What sublunary object can be esteemed of higher value? Pursuits of this kind may justly be said to bring with them their own reward.

To you this Letter is addressed, as a witness of several transactions which it  
records,

records, and as a Physician, whose private and professional character has long merited the sincerest regard and esteem of your faithful Friend,

JOHN HAYGARTH.

BATH, APRIL 9, 1801.



## POSTSCRIPT.

THE Regulations recommended, in this Letter to Dr. PERCIVAL, to prevent infectious Fevers, are equally applicable to all other Contagions propagated through the air, even the PLAGUE. If such a calamity should ever visit this country, an establishment exactly similar to Fever Wards would be excellently adapted to check its progress.

In my Letters to the late Mr. HOWARD, published in his Posthumous Works, I have recommended some improvements in the regulations of quarantine to prevent the importation of the PLAGUE. I have since endeavoured to prevail upon the wise and vigorous Government of this country to establish prompt and efficacious measures,

measures, instead of the tedious, inadequate, and useless delays, so injurious to commerce, which are at present practised in the Lazarettos of the Mediterranean. At some more auspicious season, these humble but earnest representations may merit attention.

## AN ADDRESS

*To the College of Physicians at Philadelphia,  
on the prevention of the AMERICAN  
PESTILENCE*

GENTLEMEN,

AS the subject of this Disquisition is of very high concernment to mankind, and particularly to America, you will not think that the liberty taken by a stranger can need any apology. Besides our common origin and language, we are guided by the same principles in the investigation of philosophy and physick. I might, indeed, as an individual, plead a more intimate connection with your country by the honours I have received from the University of Cambridge in New-England, and the American Academy of Arts and Sciences.

My

My mind being employed, as the preceding Letter explains, in collecting evidence to discover in what manner infectious Fevers are propagated, and in devising the best regulations for their prevention, you will readily believe that my attention was particularly excited on both these points, by the Pestilence which has occasioned such dreadful devastation in America. Dr. LINING,\* of Charleston, South-Carolina, in 1753, had clearly and distinctly discovered and recorded, that in 1732, 1739, 1745, and 1748, the Pestilence then denominated the yellow Fever, had been imported from the West-Indies into America.†

I have very deliberately and impartially considered the “ Facts and Observations  
“ relative to the nature and origin of the  
“ Pestilential Fever which prevailed in  
“ the city of Philadelphia, in 1793-7 and

\* See Edinb. Physical Essays, II.      † Appendix I.

“ 8, ’



“ 8,” published by the College of Physicians. The clear, consistent, and complete evidence\* which you have adduced, has produced in my mind the fullest conviction, that the Contagion was introduced into America from the West-Indies. I have deliberately considered all the subsequent publications on this interesting subject which I have been able to obtain, without the slightest change of opinion.

This being the case, the opposers of this doctrine, though numerous and respectable, allege causes and produce arguments, which to me appear to be entirely groundless. Most unfortunately, this medical schism has excited pernicious doubts in the minds of extraprofessional men, even of enlightened understandings. In these circumstances,

\* As this *Address* may be perused by readers who have never seen this publication, it may be useful to insert a few extracts in the Appendix II.

the legislative and executive governments cannot act with firmness, decision, and effect. In situations of danger, unanimity of opinion is of the utmost consequence for the safety of the people.

On these considerations, I think it may be of great importance to the welfare of America to review the opinions which have produced these most pernicious effects, by discouraging every judicious measure for the prevention of this Pestilence.

When you had made so plain and useful a discovery that the calamitous destruction of the inhabitants of Philadelphia proceeded from a foreign and imported Pestilence, regulations would have been instituted, with one mind, to exterminate the poison, and to guard against the return of a similar calamity. But a Physician of eminent abilities, in an evil hour, most unfortunately ascribed the generation of this Pestilence with which

America

America was afflicted in 1793, to “*putrid coffee*,” without any proof, or the slightest degree of probability.

To sanction this doctrine, a number of cases have been produced, and supported by strong and respectable testimony of many physicians, at first as individuals, and afterwards as “*The Academy of Medicine of Philadelphia*,” in a publication, intitled, “*Proofs of the Origin of the Yellow Fever in Philadelphia*.” But however strong the testimony, and respectable the witnesses, it appears to me that the Academy have alleged the most frivolous, inadequate, and groundless causes of this calamitous Distemper.

They chiefly ascribe this Pestilence to the noxious air emitted from the snow Navigation, (p. 6) which arrived at Philadelphia with a *healthy* crew from Marseilles, on the 25th of July 1797. ‘There was in the hold of this  
‘ vessel

‘ vessel a quantity of vegetable matters,  
‘ such as prunes, almonds, olives, capers,  
‘ &c. *some* of which were in a state of  
‘ putrefaction. A most offensive smell  
‘ was emitted from this vessel *after* she  
‘ had discharged her cargo, which was  
‘ perceived by persons several hundred  
‘ feet from the wharf where she was  
‘ moored.’ Prunes, almonds, olives, and  
capers, could only exist in small quantity,  
and are very little liable to run into  
putrefaction. To add, if possible, to the  
improbability of this account, it is stated,  
that the offensive smell was emitted ‘after’  
she had discharged her cargo. It is too  
obvious to escape notice that the stench  
arising from the hold of a ship proceeds  
from the putrefaction of substances which  
belong to all the three kingdoms of nature,  
vegetable, animal, and mineral; and which  
are found in *every* vessel when she has  
discharged her cargo.

In



In the same spirit, the Academy adduce facts to prove that a Fever was produced in one ship ‘ by the noxious air ‘ generated from a few bushels of potatoes, (p. 7;’) in another, ‘ by the wine ‘ which had putrefied in the hold of a ‘ ship;’ in a third instance, they say, ‘ the Yellow Fever was generated by the ‘ noxious air of some rotted bags of pepper, ‘ on board of a French Indiaman carried ‘ into the port of Bridge-town. All the ‘ white men, and most of the negroes, ‘ employed in removing this pepper, perished with the Yellow Fever, and the ‘ foul air affected the town, where it ‘ proved fatal to many of the inhabitants.’ But the 4th example next alleged manifestly *betrays* the whole purpose of this publication. The Academy say, ‘ The ‘ Fever which prevailed along the shore ‘ of the Delaware in Kensington, we believe originated from the noxious air ‘ emitted

‘ emitted from the hold of the ship Huldach. The air was generated by the putrefaction of *coffee*, which had remained there during her voyage from Philadelphia to Hamburgh, and back again.’ These bold assertions, sanctioned by respectable names, are well adapted to frighten the ignorant, but have a very different effect upon the mind of the intelligent reader. They are in a high degree improbable. Previous to the accusation of putrid coffee as the cause of the Pestilence in 1793, no medical author, as far as I recollect, has ever ascribed to vegetables in such a situation, a power to generate an infectious Fever, or any Fever, or indeed any other disorder whatsoever. In similar circumstances, thousands of people have breathed the air near putrid vegetables in an incomparably higher degree, both by sea and land, without receiving the slightest injury.

It

It is not a little curious, and, indeed, highly instructive to observe, that Dr. CALDWELL signed this opinion, that the Yellow Fever of America was generated from putrid vegetables, as an individual, in answer to Governor MIFFLIN's Letter, dated 6th November 1797, and assented to it as an academician, on the 20th day of March 1798. Yet, in an Oration spoken on the 17th of December 1798, with great declamatory parade, bold\* assertions, and flowery diction, he takes no notice whatsoever of this doctrine, but ascribes the whole mischief to a peculiar constitution of the atmosphere, as proved by the multitude of grasshoppers, flies, and muskitos. The dirt of Philadelphia he also blames, but does not allege that it existed in any unusual degree. No clearer proof need be required of self-contradiction and condemnation. It is wonderful, that the Phy-

\* See Appendix III.

sicians,

sicians, Philosophers, and Statesmen, of America, have not been struck with this circumstance so as to open their eyes against the pernicious delusion, which has so marvelously and dangerously prevailed concerning the origin of this Pestilence.

Upon a question of such great importance to America, and probably to Europe, it is proper to take notice of another dangerous error. In the newspapers, in conversation, and in letters from America, it is asserted with great positiveness so as to obtain general belief, that the Pestilence appears in the sea-port towns, not because imported thither from the West-Indies, but generated there in the docks, common sewers, &c. which are described as peculiarly filthy, and in an offensive state of putrefaction. But the Academy take no notice of such a cause. Whence we may conclude, that it cannot bear the remotest semblance of truth to persons on  
the



the spot, who have an opportunity to compare facts relative to the commencement of the Contagion with the situation of the docks, common sewers, &c. When the Academy were at a loss to substitute any causes, and did substitute such improbable causes, of this Pestilence, contrary to the clear and convincing evidence which you have published, to explain in what manner it was imported from the West-Indies, they certainly would not have neglected to produce so obvious and plausible an origin of the Distemper.

By such vague and ill-founded notions, the measures of Government have been obstructed in all the sea-ports of America. An Act of quarantine has been passed for the port of Boston in New-England, of which a medical Friend transmitted to me a copy. On perusing this Act, I was not a little astonished to find that all its principal provisions were directed to destroy  
domestick

domestick dirt, and scarce a single regulation was ordered to destroy the *Pestilential Poison*\* that might be imported from the West-Indies, Philadelphia, New-York, Salem, Newbury-Port, Portsmouth, &c. where the Pestilence then existed. When speculative errors lead to such bad consequences, they highly merit refutation.

When the publick opinion is unsettled, and bewildered by variety of conjectures, the wildest and most improbable hypotheses will be proposed, and will gain some proselytes. Mr. WEBSTER, of Connecticut, who I have been well informed is a man of sense and erudition, and editor of one of the best papers in the United States, has published two large volumes on Epidemical and Pestilential Diseases. He ascribes their generation to comets, earthquakes, volcanos, tornados, hailstones,

\* The regulations of quarantine explained in my Letters to Mr. HOWARD, to prevent the *Plague*, are exactly applicable to the prevention of this *Pestilence*.

ventured

flights of wild pigeons, large flies, dead haddocks on the coast of Norway, abundance of shads on the American coast, black worms, &c. &c. It must be owing to this strange uncertainty of opinion that an author of so respectable a character has ventured to publish such whimsical and irrational opinions. The question of cause and effect is in many instances of disease difficult to ascertain. In most cases we have nothing to direct our judgment except the close connection of place and time. But in Mr. WEBSTER'S History these essential circumstances are wholly neglected. He ascribes Plagues, Pestilence, Small-Pox, Scarlet Fever, Influenza, &c. in one quarter of the globe, to earthquakes, storms, &c. &c. in another, and at a different time, allowing an interval of months or years. In some instances he does not allow the cause to precede the effect. His imagination darts

from

from earth to heaven in a kind of phrenzy, very unlike a philosopher, and with an inconsistent wildness that would disgrace a poet. Thus he ascribes a high tide in June 1788 to a comet which appeared in the following October, and which could only be seen by a telescope.

For the cause of the Pestilence which so sorely afflicted America in 1793, he goes back as far as 1788, to collect an account of all the earthquakes, (in Iceland and in Tuscany) comets, tornados, high tides, hail-stones, meteors, sickly fish on the Banks of Newfoundland; a halo; a famine in India and China; dead had-docks on the coast of Norway, &c. &c.

To these causes, which happened in distant parts of the world, during a period of five years, he ascribes the American Pestilence: though such phœnomena of nature have not been, perhaps, more frequent during this time, than at any other



other period since the creation of the world. An author of this kind would require no notice, if the positive and plausible style of his book did not occasion apprehensions that it might mislead the unwary reader.

This Address to the *College of Physicians at Philadelphia* accompanies my Letter to Dr. PERCIVAL, on the Prevention of Fevers, because I have the fullest confidence that the measures which it recommends, from my own experience at Chester, would effectually suppress the Pestilence of America.

Between one infectious Distemper and another, there exists a very close analogy in regard to the nature of the poison, and the laws by which it is communicated. The Plague, the casual Small-Pox, Measles, Scarlet Fever, Chin-Cough, Mumps, Influenza and other infectious Catarrhs, are all Fevers. They are all of them  
propagated

propagated by a poison soluble in air, and invisible, in the form of miasms. None of them renders the atmosphere infectious farther than a few feet from the patient or the poison. This position I have proved in the clearest manner in regard to the Small-Pox, the Scarlet and Typhous Fever;\* and there is no proof, nor even a probability, that the infectious quality of any other Distemper contaminates a larger portion of air. In all of them there is a latent period, between the time of receiving the Infection and the commencement of Fever, but of different durations in each.

These reasons evince, to a high degree of probability, that regulations, founded upon the principles which have been proved by extensive experience to be perfectly adequate to the prevention of the casual Small-Pox at Chester, and of the

\* See Inquiry § viii. Sketch p. 549. Letter p. 35-40, 80.

Typhous

Typhous Fever at Chester and Manchester, might be applied with similar success to exterminate the American Pestilence.

But when positive and direct proofs can be obtained, physicians should never reason by analogy. For this reason, in December 1798, and again in January 1799, I addressed some questions\* upon this interesting subject to my very intelligent correspondent Dr. WATERHOUSE, professor of physick at Cambridge in New-England. In the Boston Gazette of May 23d, 1799, my Letter was published. It contained inquiries to which Dr. W. could not give satisfactory answers on account of the contradictory opinions and warm contentions of medical parties in America.

Failing in this application to my Friend, I now address you, Gentlemen, as a learned society, constituted by Government, whose peculiar duty it is to discover the nature

\* See Appendix IV.

of this Contagion, and the laws by which it is propagated, and to devise regulations for its prevention. For this purpose I solicit the favour of you to appoint one or more of your Fellows as a committee to institute inquiries similar to those described in my Letter to Dr. PERCIVAL, and particularly to write me full and explicit answers to the questions which I have proposed. None but active and zealous members, eager in the pursuit of improvement, ought to accept this office.

Both the College and the Academy, especially the former, prove by numerous facts that this Pestilence spreads by Infection. But there is one common error, and of great importance, which I am confident more minute and accurate observations will correct.

The College intimate, that the Infection may be caught through the medium of air, at the distance of one hundred or  
one



three hundred yards from the pestilential poison. The Academy allege, that it may be caught at the distance of a mile or a mile and a half.

The Small-Pox probably contaminates the atmosphere to as great a distance as any infectious Distemper whatsoever. One of the most respectable Physicians in England thought that from observation he had known it to extend for thirty miles.\* Whereas, in another work, I have proved by facts, that the sphere of Variolous Infection, in moderate cases, does not extend in the open air to the distance of half a yard, and in the worst but to a few yards from the poison.† What I have said of the Small-Pox is strictly applicable to the American Pestilence.‡ If the infectious

\* See this Letter p. 87.

† See INQUIRY how to prevent the Small-Pox, § viii.

‡ See CAREY'S Account of the Plague or Malignant Fever of Philadelphia in 1793, p. 68.

“ The jail of Philadelphia is under such excellent regulation, that the disorder made its appearance there

influence extend to the distance of thirty yards, no human power could prevent its infecting the inhabitants of the whole house, the whole street, and the whole

only in two or three instances, although such abodes of misery are the places where contagious disorders are most commonly generated. When the Yellow Fever raged most violently in the city, there were in the jail one hundred and six French soldiers and sailors, confined by order of the French Consul, besides eighty convicts, vagrants, and persons for trial; all of whom, except two or three, remained perfectly free from the complaint. Several circumstances have conspired to produce this salutary effect. The people confined are frequently cleansed and purified by the use of the cold bath—they are kept constantly employed—vegetables form a considerable part of their diet—in the yard, vegetation flourishes—and many of them being employed in stone-cutting, the water, constantly running, keeps the atmosphere in a moist state, while the people of Philadelphia have been uninterruptedly parched up by unceasing heat. ELIJAH WEED, the late jailor, caught the disorder in the city, in the performance of the paternal duties towards his daughter, and died in the jail, without communicating it to any of the people confined."

This fact, which is casually mentioned for another purpose, fully refutes any idea of a *Pestilential Constitution* of the atmosphere. It farther disproves the opinion that the pestilential miasms are capable of contaminating the air to the distance of one hundred, or even of ten yards.

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town, where ever it may come. If one patient could infect all persons capable of receiving the Pestilence within thirty yards, these in like manner would infect others to the same distance. On these principles, its progress through the largest city would be swift and certain.

This view of the subject demonstrates the great importance of the investigation pointed out by the questions proposed to Professor WATERHOUSE. In order fairly to reason upon this subject, the first point is to ascertain what proportion of mankind is liable to receive the Pestilence, when fully exposed to it in a small, close, and dirty room, for days and nights.\* Whence we may conclude,

\* See CAREY'S Account, p. 60.—“ It has been dreadfully destructive among the poor. It is very probable, that at least seven-eighths of the number of the dead were of that class. The inhabitants of dirty houses have severely expiated their neglect of cleanliness and decency, by the numbers of them that have fallen sacrifices. Whole families in such houses have sunk into one silent, undistinguishing grave.”

“ The

when many persons in the adjoining or in the same house have escaped the Distemper, that they had not been exposed to an infectious dose of the poison.

When these principles are clearly and fully established so as to become the public creed, measures may be taken effectually to prevent its progress, exactly upon the same principles as I have explained in my publications on the Small-Pox, and in this Letter to Dr. PERCIVAL, supported by extensive experience at Chester and Manchester. Your fellow-citizens will then have no occasion to incur the mischievous confusion of deserting their own habita-

“ The mortality in confined streets, small allies, and close houses, debarred of a free circulation of air, has exceeded, in a great proportion, that in the large streets and well-aired houses. In some of the allies, a third or fourth of the whole of the inhabitants are no more.”

By comparing this extract from CAREY's *Account* with the former in the preceding note, it appears to be highly probable that the poison does not render the air of a whole house, nor even of a whole chamber, infectious, if large, airy, and clean.

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tions. If commodious houses, with large airy chambers, be provided for the reception of patients ill of this Pestilential Fever; and if effectual care be taken to destroy this poison by separation, cleanliness and ventilation, all danger will soon cease, and all apprehensions of danger will gradually abate.

J. H.



## APPENDIX.

### I.

*Extract of a Letter from Dr. Lining, Physician at Charleston in South-Carolina, to Professor Whytt, of Edinburgh, December 14, 1753.*

“**T**HAT Fever, which continues two or three days, and terminates without any critical discharge by sweat, urine, stool, &c. leaving the patient excessively weak, with a small pulse, easily depressible by very little motion, or by an erect posture; and which is soon succeeded with an icteritious colour in the white of the eyes and the skin, vomiting, hæmorrhages, &c. and these, without being accompanied with any degree of a febrile pulse and heat, is called in America, the *Yellow Fever*.

“ This Fever does not seem to take its origin from any particular constitution of the weather, independent of *infectious miasmata*, as Dr. WARREN has formerly well observed.

“ For within these twenty-five years, it has only been four times epidemical in this town, namely, in  
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the autumns of the years 1732, 39, 45, and 48, though none of these years (excepting that of 1739, whose summer and autumn were remarkably rainy) were either warmer or more rainy (and some of them less so) than the summers and autumns were in several other years, in which we had not one instance of any one being seized with this Fever; which is contrary to what would probably have happened, if particular constitutions of the weather were productive of it, without infectious *miasmata*. But that this is really an infectious disease, seems plain, not only from this, that almost all the nurses caught it and died of it; but likewise, as soon as it appeared in town, it soon invaded new-comers, those who never had the disease before, and country people when they came to town; while those who remained in the country escaped it, as likewise did those who had formerly felt its *dire* effects, though they walked about the town, visited the sick in all the different *stadia* of the disease, and attended the funeral of those who died of it. And lastly, whenever the disease appeared here, it was easily traced to some person who had lately arrived from some of the West-Indian Islands, where it was epidemical.”\*

\* See the Physical Essays of Edinburgh, vol. ii. p. 372.



## II.

*Extracts from the "FACTS and OBSERVATIONS relative to the Nature and Origin of the PESTILENTIAL FEVER, which prevailed in the city of PHILADELPHIA. By the College of Physicians of Philadelphia.*

## 1. PESTILENCE OF 1793.

“ About the latter end of July, and beginning of August, 1793, a Fever of a new and very alarming nature prevailed in this city. It first appeared in Water-street, between Mulberry and Sassafras streets; and all the cases of this Fever were, for two or three weeks, evidently traced to this particular spot. A considerable part of the city, Northern Liberties, and district of Southwark, became gradually infected, and it was not until the coming of the frost, that the disease subsided, after having proved fatal to nearly five thousand persons.

“ The peculiarity of the symptoms, the remarkable inefficacy of remedies generally used for diseases which commonly occur in the same season of the year, with somewhat similar symptoms, its great mortality and contagious nature, sufficiently evinced, that a very unusual disease existed among us; which was soon discovered to be what is called the Siam, in the French, and the Yellow Fever in the British, West-Indies.” See Facts, &c. p. 3, 4.

## 2. PESTILENCE OF 1797.

“No instance has ever occurred of the disease called the Yellow Fever being generated in this city, or in any other part of this state, as far as we know; but there have been frequent instances of its having been imported, not only into this, but into other parts of North-America, and prevailing there for a certain period of time; and from the rise, progress, and nature, of the malignant Fever, which began to prevail here about the beginning of last August, and extended itself gradually over a great part of the city, we are of opinion, that this disease was imported into Philadelphia by some of the vessels which arrived in the port after the middle of July. This opinion we are further confirmed in by the various accounts we have received from the best authorities we could procure on the subject.”\*

## 3. PESTILENCE OF 1798.

“In the months of June and July last, twenty-seven vessels arrived in this port from Cape Nichola Mole, Jeremie, and Port-au-Prince, in the Island of Hispaniola or St. Domingo, places which had long been garrisoned by the British forces, and of conse-

\* See farther proofs in the “Narrative of Facts,” published by the College and quoted by the Academy, in order to criticise it.

quence more peculiarly adapted to the generation of Pestilential Diseases.

“ It is a well known fact, that these places were evacuated in great haste, and that a considerable number of American vessels which lay there, were employed to transport the British garrison.”

“ We have further proof that the Yellow Fever prevailed in those ports while the above-mentioned vessels lay there.\*

“ On the fifth day of July last, six or eight of these vessels, having a large number of passengers on board, of course a quantity of cloathing, bedding, &c. brought off in the greatest haste, themselves exposed to all those circumstances which are generally allowed to produce contagious Fevers; in this situation they arrived at the fort, where they were detained on board for twenty days, an occurrence well adapted to heighten the violence of the Contagion. On their arrival at the city, after this detention, they generally lay at the wharfs between Wal-

\* *Letter from Dr. STEVENS to Dr. GRIFFITHS,*  
*December 29, 1798.*

“ During my residence in Santo Domingo and the Cape, I received frequent information that the Yellow Fever prevailed in almost all the sea-port towns in the French part of Hispaniola, particularly at Cape Nichola Mole. It raged so violently at this latter place, and the mortality was so great, that it obliged the British to abandon the post sooner than they intended.”

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nut and Spruce-streets. And it is well known, that at this part of the city the Fever first appeared, about the latter end of July and beginning of August, and spread from thence to almost every other quarter. These are facts too recent and too generally admitted, to require further proof.

“ On the evening of the eighth of July, the armed ship Deborah, Captain Edward Yard, arrived at the fort from Jeremie. She buried *eight* persons during her stay there and return, and sent *six* sick to the Marine Hospital. She was one of those employed to transport troops in the West-Indies. After a detention of ten days this vessel came up to the city. We have been assured that some of her crew were brought up before her arrival.

“ On the twenty-eighth of July, the Deborah was moved to Kensington, where she was hove down. We can clearly trace the rise and progress of the disease at that place to this vessel, and also the first appearance of it in some other parts of the city to persons who had been on board her.”

### III.

#### *Extract from Dr. CALDWELL'S Oration.*

“ Pestilence can become epidemick only, when aided by a concurrent constitution of atmosphere. This position is founded on the collective experience  
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of ages. Where such a constitution does not prevail, sporadic cases of pestilence may indeed occur, but they will again disappear, and leave surrounding individuals unhurt. The nature of that peculiar state of atmosphere, favourable to the propagation of pestilential diseases, has hitherto eluded the researches of philosophers. The reality of its existence, however, is sufficiently established from the obvious effects to which it gives rise. Though ridiculed, of late, by some physicians, under the denomination of an *occult* quality, reason and observation still declare it to be a quality resting, for the certainty of its existence, on evidence as substantial, as that which supports the great Newtonian principle, the gravitation of all terrestrial bodies."

"The gravitation of terrestrial bodies" is no discovery of NEWTON'S; but a fact well known to every inhabitant of the earth ever since the creation. The visionary Hypothesis, here quoted, was never supported by any proof whatsoever. It would not deserve any notice, if the opinion did not generally prevail among physicians, so as to be productive of great mischief among mankind, by permitting the Plague, Small-Pox, American Pestilence, &c. to spread, without any attempts to check their fatal progress. On this consideration, a refutation of it,  
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by numerous well-authenticated facts, with reference to many others, is inserted in the following

*Extract from HAYGARTH'S INQUIRY how to prevent the Small-Pox, § viii.*

“ The Small-Pox was epidemical in Chester from May 1777 till January 1778, that is, for nine months, particularly for the last six; during which time I attentively marked its progress. 1. At the beginning two or three families were seized, not immediate neighbours, but in the same quarter of the town. 2. Then the children of a neighbourhood, comprehending an entry, had the Distemper, but it did not spread from them as a centre. 3. In no part of the town it has spread uniformly from a centre, farther than through an entry or a narrow lane, where all the children of a neighbourhood play together. 4. Afterwards the poor children in several parts of the town were attacked, at a considerable distance, in some places half a mile, off each other. 5. Yet, many portions of all the large streets were not infected in November, but so late as December and January, the Distemper returned to attack many who had escaped, when it was in their neighbourhood some months before. 6. In Handbridge, a part of Chester, only separated from the rest of the town by the river Dee, not more than  
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about seven had been infected during the epidemick, though great numbers of children, in this quarter, are liable to the Distemper. 7. In the middle of the city, in one street, (King's-street) of twenty-four who had never passed through the Distemper, only *two*, both in the same house, were attacked. 8. During the summer and autumn of 1777, while this epidemick was general in Chester, many of the surrounding villages, (as, Christleton, Barrow, Tarvin, &c.) and some larger towns, (as Nantwich, Neston, &c.) were visited by the Small-Pox in one or more families, yet the Distemper did not spread generally through any of these towns. As both the state of the air, and the Variolous Poison, were the same in these places as in Chester, why did it not equally *infect* their *air* as well as ours? 9. At Frodsham the Small-Pox began in May, and gradually became more frequent, so as to be remarkably epidemical on one side of the street for several months, yet nearly one half of the town, on the opposite side of the street, still remained quite uninfected on November 18th, 1777."

"The epidemical Small-Pox, which has been attributed to a peculiar constitution of the atmosphere, by the sagacious SYDENHAM, and by most other physieians who have since written on this subject,

ject, may be supposed incompatible with this conclusion, but I think it can be explained in a satisfactory manner, on the principles of this INQUIRY.

“ As particular facts convey more certain conviction than general observations, I request the reader to consider the following Table. The first and second columns are quoted on the authority of my very ingenious friends Dr. PERCIVAL and Dr. AIKIN.

“ Deaths by the Small-Pox, in 1781.

	Manchester.		Warrington.		Chester.	
January -	-	3	-	-	7	-
February -	-	5	-	-	8	-
March -	-	10	-	-	5	-
April -	-	17	-	-	5	-
May -	-	31	-	-	5	-
June -	-	44	-	-	6	-
July -	-	55	-	-	3	-
August -	-	46	-	-	4	-
September -	-	53	-	-	3	-
October -	-	36	-	-	0	-
November -	-	31	-	-	2	-
December -	-	13	-	-	2	-
	<hr/>		<hr/>		<hr/>	
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“ In January, 1781, the Small-Pox was brought from Dublin to Parkgate, where it was not propagated to a second family. In the same January, it



it was brought from Liverpool to Neston, where it continued to spread for several months. Yet Parkgate and Neston are two towns, or rather two parts of the same town, not a single mile distant from each other. I relate this fact on the best authority, Mr. WOLSTENHOLME'S, surgeon, of Neston.

“Hence we see, on surveying several large neighbouring towns, as Manchester, Warrington, and Chester, that the Distemper is very seldom absent from any of them, but that it becomes generally epidemical at uncertain periods in each, and at times which hold no correspondence with one another. In like manner, on comparing several neighbouring villages, we observe, some entirely free from the Distemper, others have a few only infected, others suffer a general seizure.—The observation is generally true in regard to this part of Great-Britain; but it will be thought sufficient to have produced a few instances.

“Whoever considers the numerous facts here faithfully related, will perhaps be convinced, that the Distemper becomes epidemical, neither through any peculiar state of the air, nor of the human constitution. No such difference can reasonably be supposed to exist in large towns within twenty miles of each other, much less in neighbouring villages,

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and least of all in different parts of the same town or village. If what is above advanced be true, the seeming mystery may be explained in a few words. *The Small-Pox continues spreading as long as persons liable to the Infection approach patients in the Distemper or infectious matter, either in the same chamber, or very nearly in the open air, and then ceases.* When it has attacked none, or but a few in any place for some years, a large number of the young generation becomes liable to infection; if, therefore, it be introduced in these circumstances, many of them nearly approach the infectious, become themselves infectious, and propagate it to others, so that the Distemper seizes all capable of having it, except a few who are kept from a free intercourse with the rest; this is called the epidemical Small-Pox. In other places, the Distemper does not spread from a Small-Pox patient, none liable to Infection approaching within the infectious distance, either because it has lately been epidemical, so that nearly all have had it, or because the patient is kept separate from the rest, through his own prudence or their fears. When only one or two families are infected by the Small-Pox in any town or village, no one will dispute it is possible, that no person liable to the Distemper may come within the infectious distance

distance of the poison, before it be destroyed by washing or other methods of cleanliness. If this be done by accident or design, I maintain that the Distemper will spread no farther. On the contrary, no one acquainted with the present habits of carelessness in regard to this poison, and how generally it is dispersed in clothes, furniture, and food, will doubt that some of it, while fresh, may come within the infectious distance of some persons liable to the Distemper, and, in consequence, that these will be attacked. The more patients are infected the more poison will be generated, and, if many in the place are susceptible of Infection, the more quickly and generally it will spread. May not this view of the matter entirely explain the difference between the sporadick and epidemick Small-Pox, so often mentioned by medical authors?"

This doctrine is fully confirmed by many other facts recorded in the *INQUIRY*\*, and in the *SKETCH*, of a Plan to exterminate the casual Small-Pox, by my very respectable medical correspondents, as well as my own future observations.†

It is highly probable, that a similar statement of facts would lead to the same conclusion in regard to the American Pestilence.

\* See *INQUIRY*, § viii.

† See *SKETCH*, p. 222, 226, 237,—241, 335, 338, 441, 443, 452, 549, 557.

## IV.

From the Boston Gazette, May 23, 1799.

*Extract of a Letter from JOHN HAYGARTH, M.D. F.R.S. &c. &c. to BENJAMIN WATTERHOUSE, Professor of the Theory and Practice of Physick at the University of Cambridge, New-England, respecting the means of preventing the YELLOW FEVER, (so called.)*

*Bath, Jan. 25th, 1799.*

“ Four years ago I sent you some observations of mine on the best method of performing quarantine for the Plague, printed with the posthumous works of the late Mr. HOWARD, and a Letter, containing inquiries to illustrate the nature of the Contagion which has spread the fatal Pestilence through Philadelphia and some other cities. You are intimately acquainted with the mode of preventing the Small-Pox, proposed in my “ INQUIRY, SKETCH, and CORRESPONDENCE.” No subsequent fact has occurred, or been communicated to me, which can in the slightest degree invalidate the principles attempted to be established in those publications. In like manner I have discovered that mankind may be preserved from the Contagion which produces the Typhous Fever with still greater ease and certainty. I find, 1st. that this poison infects



22 out of 23 persons exposed to it for nights and days in a close, dirty, small room; 2d. That, in a clean, airy, and spacious chamber, few or none are infected. These facts prove incontestibly to what a narrow sphere the Typhous Contagion is limited; And 3d. That the poison remains generally from ten days to six weeks, or longer, from the time of exposure till the commencement of the Fever, in a *latent* state. Upon these principles I proposed to receive all the poor citizens of Chester ill of infectious Fevers into separate wards of that Infirmary. The proposal was approved, and has been executed for fifteen years. During this period the “*Rules of Prevention*,” which you will find in HOWARD on Lazarettos, p. 208, have effectually answered their intention, so that not a single patient in other parts of the house was ever *suspected* to be infected by the Fever.

“ A fatal and infectious Fever had long prevailed at Manchester and its neighbourhood. In 1796, the Chester plan of taking poor people ill of infectious Fevers out of their own houses, and receiving them into separate wards adjoining to the Infirmary, was adopted. The success of this measure has been most wonderful; the number of Fever patients, in a certain district of the town, for two years and eight months,

months, which preceded this establishment, was one thousand two hundred and fifty-six; something more than the average of four hundred a year. The Fevers in the same district, from July 1796 (a period commencing two months after the establishment of *the House of Recovery*) to July 1797, (being twelve months) were only twenty-six; of these, in the last four months, (from March to July 1797) there was only one Fever patient. In the year 1796, there was a decrease of near four hundred in the bills of mortality at Manchester, comparing the two years which preceded and succeeded this Institution. The charge of the overseers for coffins was diminished nearly one-third in the latter period.

“ I cannot entertain a single doubt that exactly the same measures would speedily and effectually exterminate the Pestilence which has so dreadfully afflicted America: as far as we may trust to the analogy of the Variolous and Typhous Contagions. But *you ought not to depend upon analogy*, when you have such an opportunity as the late melancholy progress of this mortal Distemper must have presented, to obtain the actual observation of facts. By means of your medical pupils dispersed in various parts of America, you may collect the most interesting intelligence, in like manner as was accomplished by  
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the late celebrated Dr. ALEXANDER MONRO, in Scotland, relative to inoculation of the Small-Pox. You are so intimately acquainted with the mode of investigating the nature of the Variolous Contagion, successfully employed in the "INQUIRY and SKETCH," that you will immediately discern the importance of the following questions, which I request the favour of you to disseminate through America; and to solicit explicit answers to each of them.

1st. *What proportion of persons fully exposed to the Pestilence are infected?* Cases to determine this question ought to be circumstantially related. *Do mothers, wives, nurses, sisters, or daughters, who have most intimately attended their relations, sometimes, and how often, escape Infection?*

2d. *To what distance from the poison is air rendered infectious?* Upon this point will obviously depend the practicability of preventing and exterminating the Distemper. Collect all the well-authenticated facts in your power, where one or a few in a family were attacked, and the remainder preserved. *What numbers walk through the streets, where infection exists, but remain unaffected by it? How many persons in the houses adjoining, or opposite to those which contain the Pestilence, escape infection?* To remove all doubts, let it be noted,

noted, from some meteorological register, in what direction the wind has blown during the epidemick. Let names and dates be accurately stated. A minute detail of circumstances affords most satisfactory conclusions.

3d. *How long does the poison remain latent in the body; that is, what period elapses between exposure to Contagion, and the commencement of the Fever?* On the determination of this point, the rules of quarantine ought to be formed.

4th. *Can it be ascertained at what time and in what manner the poison was brought to Philadelphia, New-York, &c. and the small towns in the neighbourhood of these cities?* This intelligence would be of the greatest advantage to prevent future calamities, but which will be very difficult to obtain; as the authors of such dreadful mischief will be sedulous to conceal the transactions which have produced it.

“Lest my Letter of the 8th of December 1794 may have miscarried, I will send a copy of the queries it contained.

“1stly. When and where did the Fever begin at Philadelphia, &c. what were the names and local circumstances of the ten first patients attacked, and at what distance of time from each other?”\*

\* “Since this question was proposed to Professor WATERHOUSE, it has been answered in a satisfactory manner in regard



“ 2dly. Did the Distemper spread from the first and other patients who were attacked at the beginning of the epidemick, to the leeward, or windward?

“ 3dly. Or, on the contrary, did it principally spread in those families who had intercourse with the infected?

“ 4thly. What ships arrived at the ports of Philadelphia, &c. previous to the commencement of

regard to Philadelphia, as above explained, by the College of Physicians. In TYTLER'S Treatise on the Plague or Yellow Fever, (p. 144 and 506) there is a clear account of the means by which the Pestilence was imported from the West-Indies into New-Haven, Connecticut, in 1794, into Chatham on Connecticut River, into Providence in Rhode Island, into Portsmouth, &c.

The evidence concerning its importation into New-York in 1795 is strangely contradictory.

Dr. WARREN, Professor of Anatomy, declares, as to the Pestilence of Boston, which began in July 1798, “ *that its origin is domestic, I have not a single doubt.*”<sup>\*</sup> But Professor WATERHOUSE, in the copy of TYTLER'S Treatise which he sent to me, with his usual sagacity and discernment, writes this note. “ *I must dissent from my worthy colleague.*” It is manifest, however, that the former opinion had become the prevailing creed, because the Act of the State of Massachusetts, which passed on the 18th of June 1799, to choose a *Board of Health*, makes provisions to destroy domestick, not imported, Contagion.

In the discussion of this question there is one remark, which is highly important and instructive. “ This Pestilence has “ never visited any other town in America than the sea-ports, “ which have constant intercourse with the West-Indies.”

<sup>\*</sup> See TYTLER'S Treatise, p. 505.

the epidemick? Whence came they? Was the Fever at that place?

“ 5thly. At the height of the epidemick, and in the part of the city where it principally raged, were any and what number of families totally free from the Distemper, at certain periods of its progress?

“ What publications among you give the most instructive account of this Pestilence, which appears to be falsely denominated the *Yellow Fever*. Do any of them contain the intelligence I solicit in regard to the communication of the poison? Can you send me a full abstract of such intelligence? Is this Distemper some species of the l’ague? CHISHOLM appears to me to give the most intelligent account of the fatal Pestilence in the West-Indies. Does it correspond with your observations in North-America? Your Letters respecting the Small-Pox, printed in my late publications, contain matters so

This fact is universally admitted, I believe, by all the contending parties, and it has been particularly confirmed to me, on the best authority, by his Excellency the Honourable Mr. ELLSWORTH. This circumstance alone will have great weight with every judicious reader, and will produce an high degree of conviction that the American Pestilence *always* originates from foreign Contagion.

The manner in which the Plague and the Small-Pox are introduced into a place, frequently eludes the most diligent researches; and yet no person in this country doubts, that these Distempers *always* originate from some communication of the Pestilential and Variolous Poisons.

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much to the purpose, that I entertain very sanguine expectations of useful information from your observations on this destructive Distemper.”

*POSTSCRIPT.*

THESE inquiries were originally sent to Professor WATERHOUSE, in 1794 and 1799. They are now addressed to the College of Physicians at Philadelphia. I am solicitous farther to address them to the respectable and intelligent Physicians of New-York, Boston, and of many other towns in America, whither this Pestilence has been imported during the last eight years. If explicit answers to each of the questions here proposed were communicated to the publick, by medical witnesses in various situations, a body of evidence would be obtained, of great importance to their country and to mankind.

Dr. WATERHOUSE, in a Letter to me, says, “I cannot gratify you by giving answers to your interesting queries. Our Physicians are still divided in their opinions respecting this Malignant Fever, and such contradictions have been advanced that the impartial searcher after truth is soon discouraged.”

When Physicians of the best abilities are thus bewildered by the violent medical factions which have most unfortunately prevailed in America, it is hoped  
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that the candid reader will *excuse* the interference of an impartial stranger, on an occasion which he judges to be highly interesting to the cause of truth and of humanity.

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*Addition to the Note, p. 120.*

After "T. BERNARD, esq;" read,

Just after this sheet was printed, I received, from the *Society for bettering the Condition of the Poor*, a copy of Dr. MURRAY's benevolent proposal to institute Houses of Recovery for patients ill of infectious Fevers in London, published by the desire and at the expence of the Society. This circumstance fully confirms two observations which are advanced in the preceding pages; that such establishments would be cordially promoted, with their usual liberality and beneficent spirit, both by Physicians, and by this Society.

On this occasion, it will not be irrelevant briefly to consider the question, whether Fever Wards should be annexed to Infirmeries as at Chester and Manchester, or should form separate institutions. The former arrangement is undoubtedly to be preferred where ever there is an opportunity, as most economical, as most beneficial to the poor objects of such a charity, and, beyond all comparison, as best adapted to preserve all Hospitals themselves free from infectious Fevers. No recapitulation of arguments will be required to establish these obvious conclusions.

